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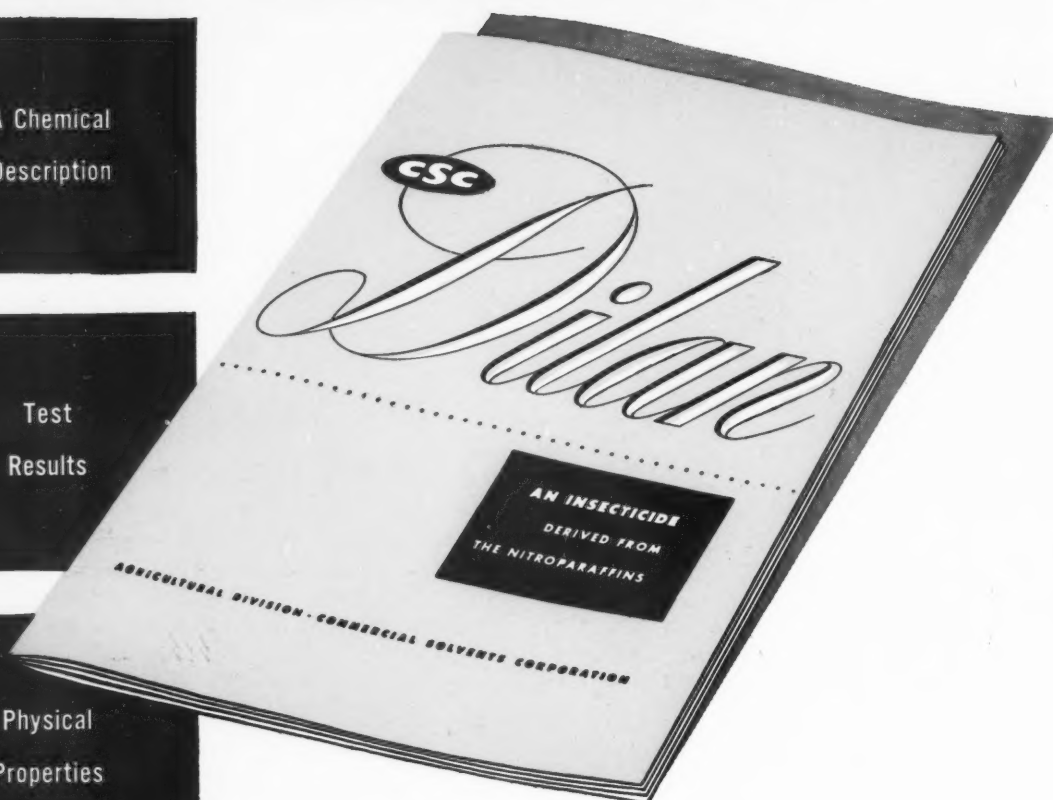
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NO. 2 OF A SERIES  
ON HOW TO  
**Stretch a MULTIWALL  
Paper Bag**



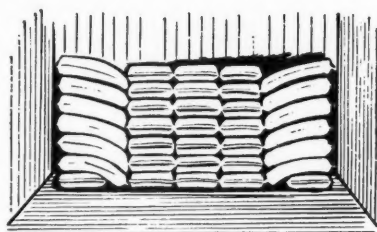
Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here is one way to stretch them . . .

## PROPER CAR LOADING

### PREPARATION IS IMPORTANT

Cars should be clean, dry, and free from protruding nails or other projections. Remove all dirt, dust, rocks and grit from floor and walls. Remove loose nails and cover loose bolts with cardboard or several thicknesses of car liner. (Picture shows how to use straight-edge board to locate protruding nails, etc.)

Cover floor with good grade of car liner and put at least three thicknesses on door edges. Line walls, too, if they are in bad condition. Use asphalt-laminated paper to seal door cracks against dirt, rain, snow and cinders.



### FOLLOW THESE LOADING RULES:

**1** The car should be loaded so that the filled bags will not come in contact with side doors.

a. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board.

b. Follow proper loading patterns. (See illustrations.)

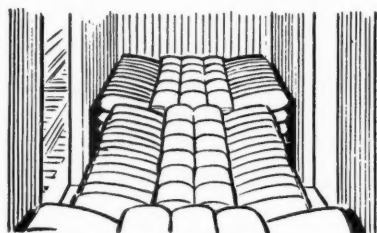
c. Use retaining strips of special Scotch tape applied across the load, or steel retaining straps covered by one thickness of corrugated board.

**2** Bags should be loaded tightly, solidly and flat, to minimize shifting in transit.

**3** Balance the load so there will not be more weight on one end or side than on the other end or side.

There are, in general, three different methods of loading—crosswise, brickwall and lengthwise. The crosswise method is generally considered to be the most acceptable.

Loading in car doorways should be done in such a manner that this part of the load acts as a keystone between the loads in the ends of the car. (See illustration.)



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## In this issue . . .

**Every farm chemicals plant** should have a well-planned safety program that includes a safety committee with members from both management and labor. That's the key point in the second safety article in our series. U. C. Ellis, general superintendent of Swift & Company Plant Food Division, outlines the work of the safety committee and describes a safe method for handling bulk storage by using the "multiple shot" technique. The article is on page 13.

**An all-time high** in fertilizer consumption was reached in 1950 and estimates indicate a consumption of 19 million tons in the United States during the fiscal year ended June 30, J. E. Totman, chairman of the National Fertilizer Association, said at the annual convention of the association in Atlanta, November 12 to 14. For a summary of Totman's talk, along with remarks made by H. R. Krueger, W. M. Myers and other speakers at the convention, see the article on page 19.

**When the autumn air** starts to get brisk there's a big temptation to forget work for a couple days and answer the call of the great outdoors. Likewise in summer, with dramatic pennant races occupying the news, lots of us like to sneak out to see a ball game or two. Employees in farm chemicals industries are no different from any others in this respect, so we think the article "How To Handle the Absentee," on page 23 will be of interest to the industry. J. E. Bedford notes many of the excuses offered for absence and tells what management can do to curtail the practice.

**The double purpose** of treating superphosphate with free ammonia in the manufacture of fertilizer was discussed fully last month by Joe C. Sharp and Gordon A. Crowe, of Technical Service Section, Spencer Chemical Company. The pair described how the ammonia acts as a conditioner for the superphosphate and how the superphosphate functions as a neutralizing agent for the ammonia. In this issue, in the article on page 27, the writers point out optimum plant operations insofar as lack of reversion and bag-cake are concerned.

**Quiet, trouble-free operation** is just one of the advantages of a high-speed vibrating screen for continuous flow or batch screening operations on chemicals and other materials. According to the Universal Vibrating Screen Company, the unit removes plus and minus materials, keeps the mesh clean and free from binding and is easy to adapt to any use. For a more detailed description of the screen, read the feature on page 56.

NOVEMBER, 1951

# farm chemicals

Formerly  
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Established 1894

PIONEER JOURNAL OF THE FARM CHEMICALS INDUSTRY

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No. 11

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## Cover Story

West Coast fruit growers continue their task of fighting the ravages of insects with modern mechanical equipment and recently developed pesticides. The man in the cover picture is using a John Bean power sprayer to treat the undersides of fruit trees. Meanwhile, the Select Committee to Investigate the Use of Chemicals in Food Products is holding hearings on the coast. Some statements of opinion made during previous hearings before the group, better known as the Delaney committee, have tended to alarm the public about the "grave dangers" inherent in the use of pesticides. The danger of loosely made and unsupported statements is discussed editorially on page 7 of this issue.

A magazine international in scope and circulation and devoted to manufacturers, mixers, and formulators of fertilizers and pesticides

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### IMPORTANT ANGLE ON FARM PROFITS

Farmers of an earlier day thought that a full moon helped to bring about a full harvest. Most modern farmers, placing science above superstition, rightly reject such ancient beliefs as so much "moonshine."

Today's farmer knows that crops increase as the fertility of the soil increases. That is why he depends on the wise use of the correct fertilizer to enrich a poor soil . . . or to maintain or improve a good one.

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FARM CHEMICALS

# farm Chemicals facts

## . . . Briefly Noted

New sales representative for **Pennsylvania Salt Manufacturing Co.** is **William T. Stratford**, of Burlington, N. C. Stratford is in the B-K department, according to an announcement from S. H. Crounse, sales manager. Stratford will have headquarters in the company's Atlanta, Ga., sales office and has been assigned to the southeastern territory. He will be under the supervision of J. H. Morrison, district sales manager.

After a year of active duty with the Marine Corps, **C. H. Crain** has rejoined the **International Paper Co.** as a salesman with Bagpak Division's Baltimore office. The appointment was announced by R. I. LaMarche, sales manager for the division. Crain will cover Maryland and Virginia and parts of Delaware, West Virginia and North Carolina. He spent two years with the company as a salesman in the Atlanta, Ga., office before entering the Marines.

A new plywood warehouse, said to be the largest in the United States, has been completed for **United States Plywood Corp.** in Los Angeles, Cal., S. W. Antoville, vice president, announced recently. A complete distribution unit, the new warehouse contains a 60,000-foot office, showroom and sales room center, and a 30,000-foot paved area for customer parking and truck maneuvering. Loading and siding facilities permit four box cars and eighteen trucks to be handled simultaneously. Manager of the new building is **Donald L. Braley**, veteran plywood dealer, the company announced.

**Nilok Chemicals, Inc.**, of Niagara Falls, N. Y., has appointed the **American Mineral Spirits Co.**, New York City, as exclusive distributor in the Eastern Seaboard States as serviced by **Amsco's** district offices in Philadelphia, Rahway, N. J., New York, Providence, R. I. and Boston. Nilok is a producer of **Cyanuric Chloride**. Cyanuric Chloride is used in fungicides, insecticides and many other chemicals.

**Died: Theodore P. Walker**, former president and chairman of the board of **Commercial Solvents Corp.**, Nov. 28. Walker joined the company in 1922. He was elected president in 1938 and was made chairman of the board in 1947.

**Died: Dr. William Lee Judefind**, assistant to the vice president of operations, **Davison Chemical Corp.**, Nov. 14. He had been with the company since 1920, when he joined the organization as a research chemist.

**Ellis Chemical Co.** has been purchased by the **Indiana Farm Bureau Cooperative Assoc. Inc.**, the cooperative announced recently.

Marking of "hormone-type" weed killer drums again will be sponsored by the **National Agricultural Chemicals Association** during the coming months. The containers used for 2,4-D and 2,4,5-T come within the scope of this identification plan. Until present stocks of containers are exhausted, however, some unmarked drums may appear the first part of the season, according to **L. S. Hitchner**, executive secretary of NACA. "With a shortage of drums looming larger than ever, the re-use of drums assumes greater importance now than last season," Hitchner stated. The marking program will be valuable in eliminating chance contamination of other agricultural chemicals because minute amounts of "hormone-type" weed killers in insecticides and fungicides can damage sensitive crops, he said. The steel or fiber drums are marked by a **broad purple strip** around the center of the container.

Elected president of the Middle West Soil Improvement committee at the recent meeting in Chicago was **Jefferson D. Stewart Jr.** Stewart is executive vice president of **Federal Chemical Co.**, Louisville.

**Malcom G. Chace Jr.** replaced his father as a member of the board of directors of **International Paper Co.**, it was announced by the company. **Chace Sr.** had been a director since 1922. His son is president of **Berkshire Fine Spinning Associates** and a director of **Rhode Island Hospital Trust Co.**, **Narragansett Electric Co.** and **Manufacturers Mutual Fire Insurance Co.** of Rhode Island.

**J. Albert Woods**, president of **Commercial Solvents Corp.**, has been elected to the board of directors of **Chemical Bank and Trust Co.**, chairman **N. Baxter Jackson** announced. Woods has been president of **Commercial Solvents** since April 1, 1950. He is a director of **Commercial Solvents**, **Wilson and Toomer Fertilizer Co.**, **Southern States Bag Co.** and **Barrett National Bank**, Jacksonville, Fla.

New product manager for Surfactants and related chemical products of **Antara Chemicals** is **James M. Cloney**. Cloney formerly handled sales of all Antara products on the West coast. Antara is a division of **General Dyestuff Corp.**

An exhibit illustrating the merits of **Pyrenone Grain Protectant** was a feature of the convention of the **American Vocational Association, Inc.**, in Minneapolis, Minn., Nov. 26 to Dec. 1. The new insecticide is used to protect corn and small grains in storage. A presentation of the material as an effective, safe method of controlling insect infestations was made at the convention. It is a product of **U. S. Industrial Chemicals Co. Division of National Distillers Products Corp.**

The **Homestead, Hot Springs, Va.**, will be the location for the seventh annual convention of the **American Plant Food Council** June 19-22, 1952, the council announced.

**A. H. Clarke**, of **Bemis Bros. Bag Co.**, was elected to serve as a member of the board of directors of **Associated Industries of Missouri** for 1951-52, the company stated. Clarke is vice president in charge of production and a director of **Bemis**.

Nine appointments recently were announced by **Columbia-Southern Chemical Co.**, to complete a reorganization of the corporation's sales staff. The company is a subsidiary of the **Pittsburgh Plate Glass Company**. The company produces chlorine, caustic soda, soda ash and related chemicals. The appointments include: **H. W. Gleichert** as assistant to the vice president; **E. W. Haley** as director of sales in Pittsburgh; **A. W. Reynolds**, administrative assistant to the vice president in charge of sales; **C. F. Bingham**, and **J. F. Dockum**, assistant directors of sales; **P. A. Fodor**, Philadelphia District Sales Manager; **R. M. Simpson**, acting manager of pigment sales; **E. M. Rollins**, district sales manager at Dallas and **C. J. Stroemple**, market research and development department, in Pittsburgh.

New general manager of **Commercial Solvents' export division** is **T. P. DeFargus**, former manager of direct sales for **E. R. Squibb and Sons**. **W. D. Ticknor, Jr.**, has been named his assistant.



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\*August, 1951 research study.

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## Despite Scare Headlines

### Death Takes a Holiday

Those scare headlines that are becoming more frequent lately concerning the grave dangers of the more recent pesticides and their harmful effects on the human body are refuted by statistics compiled by the Public Health Service, in Washington, D. C.

According to a statement made by Samuel W. Simmons and Wayland J. Hayes, of the Public Health Service, there hasn't been a significant change in the rate of fatal chemical accidents during the past decade. The statement was read at the annual meeting of the Chemical Speciality Manufacturers, in Washington, D. C. It was backed by statistics compiled at the Service. They show that despite the vast increase in the number and tonnage of toxic compounds during the past ten years, the death rate from these chemicals has not risen appreciably.

Deaths caused by acute accidental poisoning by solids and liquids in 1940 were 1.0 in each 100,000 population and deaths from poisonous gases were 1.2, the report showed. Ten years later, in the 1950 figures gathered by the Service, it is revealed that exactly the same number of deaths, 1.0, were caused by poisoning from solids and liquids and only 1.4 deaths were caused by gases. These figures also are based on each 100,000 population.

Simmons and Hayes presented the results of a survey, showing that only six cases of non-fatal chemical poisoning were caused by insecticides and 11 by rodenticides of a total of 144 in which a definite cause of death was listed. At least 22 were laid to the ingestion of kerosene and 31 to the use of aspirin.

Furthermore, the increase in the production of arsenates and the development and production of many thousands of pounds of newer pesticides, including DDT and the newer BHC, had not caused a rise in the death rate from chemicals, as the excited testimony before the Delaney committee might indicate.

The pair also noted that the good safety record of pesticides and other "economic poisons" might further be improved by the introduction of warfarin and other relatively harmless rat poisons, because their

use probably will cut down the household cases of poisoning caused by more toxic rat bait.

Far greater and more significant is the number of deaths caused by accidents—67.1 of each 100,000.

The farm chemicals industry has indicated it realizes the very real situation that exists in regard to plant dangers, just as it has shown it is aware of the dangers involved in the manufacture and use of powerful pesticides.

But the testimony before the Delaney committee has given many Americans the impression that the development of new and widely effective pesticides may be correlated with a corresponding rise in the death rate from chemicals, even though the Public Health Service figures indicate no such rise. Several persons, testifying before the committee, have sought to stretch the long arm of coincidence to make pesticides responsible for any deaths or diseases not directly traceable to any other cause.

In such a climax of opinion unreasonable restrictions might be placed on the use of the chemicals, which are required for the large-scale production of food, fiber and forage.

This view is supported by J. Albert Woods, president of Commercial Solvents Corporation, who declared recently "unnecessary restrictions would stifle insecticidal research and the development of new and improved pest control methods."

"The present ballyhoo and hullabaloo," he asserted, "have placed emphasis on hazards of use rather than on the great benefits derived from their proper use."

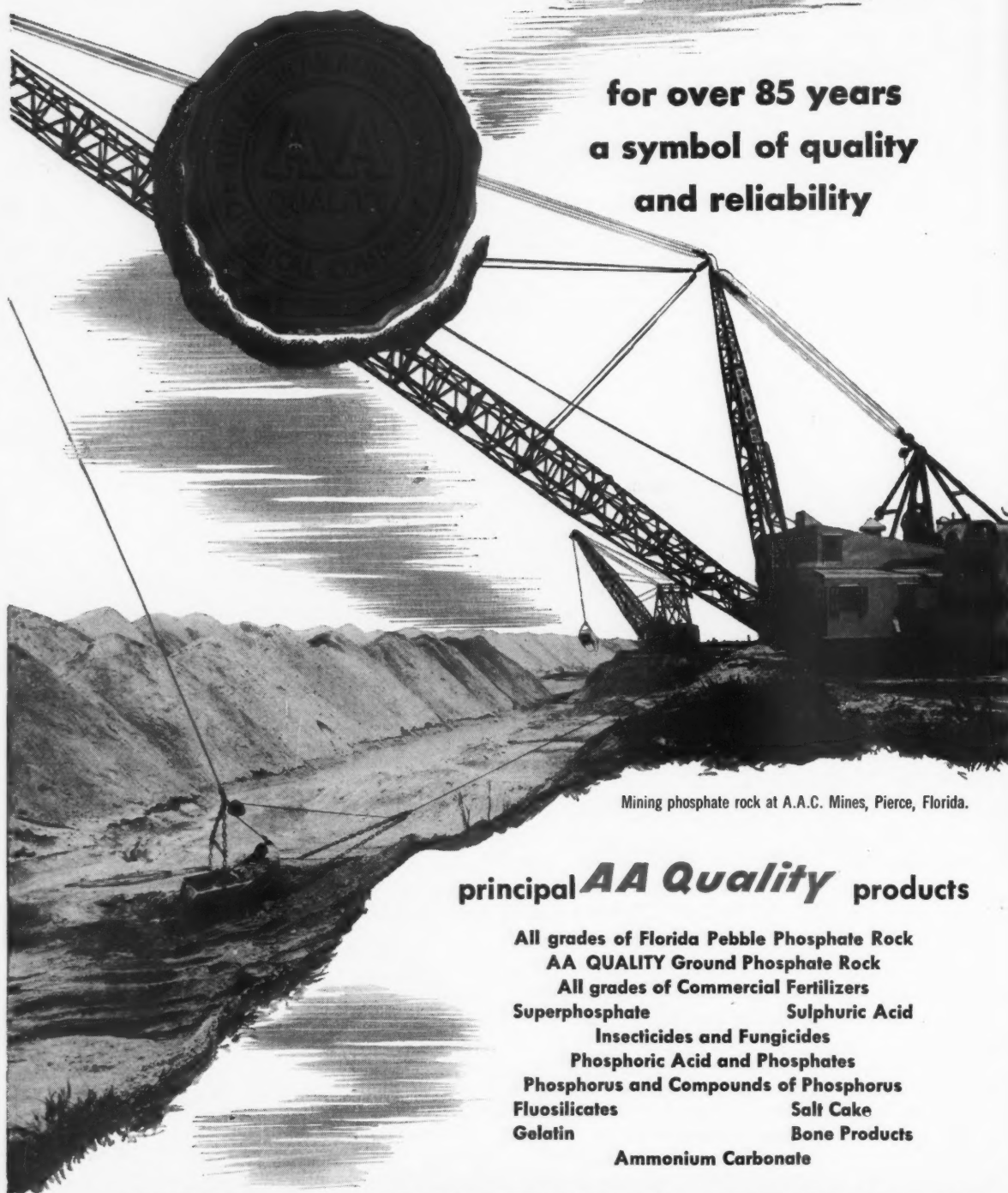
"It is only fair that the public be given all the facts and not just statements prefaced by the word 'may' which arouses the fear of the American public against the methods of use and application of pesticides in the production and storage of food," he continued. "It should be pointed out that with one of the most widely used insecticides, DDT, not one case of human death has been proved as due to exposure or from residues on foods."

There's nothing wrong with investigating pesticides and all other farm chemicals to determine their toxic effects on animals, plants, and on humans. The industry has demonstrated often that it needs and uses information gained on this subject. The real danger lies in the undue alarm caused by unfounded statements and speculations regarding the pesticides and their use.

—HAMILTON C. CARSON

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# farm chemicals outlook

Report from Washington

by Fred Bailey & Don Lerch

Washington's "house of paper regulations" is sagging under the load. The mass of orders, allocations, and over-riding edicts has some officials mired in their own handiwork.

Growing differences between "statistical supplies" and hard goods at the plant has both government and industry worried. What's more, it appears the gap will grow rather than narrow . . . at least during 1952.

Running battle over sulfur distribution is a case in point. Many producers and users agree that supplies available at fertilizer plants may differ greatly from the amounts supposed to be available.

DPA's high-command decisions are being made for the most part without the benefit of formal industry advisory committees. Their big decisions over how the pie is cut are made behind closed doors. Reason given is security restrictions.

NPA therefore is left with the job of facing the industries involved and trying to put the programs into operation. Industry is being educated to the discrepancies between Washington plans and plant operations. You can expect a growing conflict in the months ahead. It will become more acute as supplies become harder to get.

With sulfur reserves down to a six-months' supply, according to some primary producers, Washington has about run out of time in the opinion of informed quarters. Present reserve compares to a pre-war peak of a two years' supply. There is almost unanimous agreement that reserves cannot be cut further in view of continuing threat of communism.

There is some conviction that the general plans for distribution will not work. Basic reason is the feeling that the amount of sulfur earmarked for use exceeds the amount being produced. Sulfur producers are particularly concerned over this phase of the problem.

Producers see themselves bound to follow government orders and at the same time unable to fill the rated demand. They are fighting for a realistic program.

USDA officials expect continuing raids on the amount of sulfur for fertilizer.

They see little slackening in their arguments over sulfur for "scratch pads or pork chops". They wonder at the ability of some mobilizers to "find new sulfur" when the going gets tough.

Industry's demand for flexibility in the sulfur program runs headlong into Washington's fear that company-wide manipulations will cause a rash of spot shortages. Most fertilizer men here see this as essential to efficient operations.

The Bureau of Entomology is fearful of resistance among cotton growers to dusts without sulfur. Some of their experts say sulfur is rarely needed east of the Mississippi. Grower preference for sulfur in dusts is well known. No company wants to be the only producer offering an alternate material.

BEPQ has no final answer . . . hopes government and industry educational programs with the growers can handle the situation. Some carry-over materials are reported to contain the usual amounts of sulfur . . . are expected to be on the market for the early buying season.

USDA officials plan to keep hammering for more nitrogen. They are convinced that our expanding population, plus growing demands from other industries, will take all the nitrogen which can be produced under an accelerated expansion program.



Officials are jittery over continuing raids on agriculture's nitrogen by other users. There is the decided feeling that the mobilizers underestimated total demand . . . with the farm needs subject to "give" in the squeeze.

Target of a 600,000-ton increase in nitrogen is only the beginning, as most officials see it. Many estimate the need at 900,000 tons by 1954-1955. The Department had misgivings over accepting the present program . . . looks at it as the first round in a continuing battle. It took the full resources of the Department to get approval through the Requirements Board . . . will take comparable efforts to keep it rolling.

Latest predictions of plant food supplies for the coming year compared with 1951 call for 5 per cent more nitrogen, 5 per cent more potash, and 7 to 8 per cent less phosphate. These are the estimates USDA is using in planning for 1952 farm production.

Fertilizer and pesticide pricing is bogged down in a series of new orders and over-riding directives. It's a race to establish acceptable pricing standards before the big rush of spring business begins.

Outlook for pesticides is clouded by the new concern over supplies of inorganics . . . sulfur, lead, copper. This represents an almost complete switch from a year ago when prospects for the organics, particularly DDT, were the main problem.

USDA is surveying the carry-over of lead arsenate in an attempt to determine the seriousness of the 1952 outlook. While there are some stocks on hand, Washington believes they are far under what will be needed to protect fruit, especially apples, during the coming season.

Something has to give is the way officials look at the lead situation. High policy and politics over embargo on imports caused by the price huff is not their responsibility. But they see themselves taking the blame . . . catching the farmers' ire.

Amount of lead used in pesticides is relatively small when compared to big users in the oil and battery business. Agriculture again fears it will take the "leavings".

In contrast, DDT production appears headed for another substantial increase. There are no indications of an early letup in foreign demand, however.

Supplies of benzene, chlorine and some other essentials for the "organics" are on the increase. Washington hopes industry can lick the problem of spot shortages.

Washington believes it would take a "near miracle" for the Food and Drug Administration to put its expected residue tolerances on fresh fruits and vegetables into effect during the 1952 production year. While most of the tolerances may be accepted without protest, it is usually recognized that every company which testified during the Hearing has a legal right to appeal, if it so wishes. The legal battles over the interpretation of the evidence could take months.

Some observers are curious why the Agency has taken so long to arrive at conclusions in view of the urgency with which the problem was viewed. If there were health hazards to the public which needed government supervision, there are still no definite tolerances to guide their solution.

The pesticide industry, fighting to disengage itself from the other phases of the Congressional investigation of chemicals, is puzzled why cosmetic and detergents have been added. There is some opinion that it will be difficult to obtain a constructive appraisal of the question in view of the growing diversity of fields under consideration.

Watch for fireworks in the new session of Congress over the tightening price squeeze in agriculture. Washington presently is sharply divided over the seriousness of the decline in farm prices.

In answer to optimism in some quarters is the hard fact that the average of all farm commodities, as computed by BAE, dropped 7 per cent from mid-February to mid-September, while production costs continued a steady advance.





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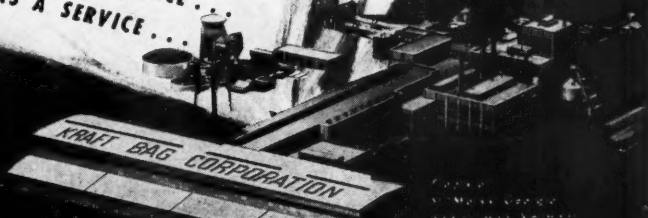
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# SULPHUR

**\*Interesting Facts Concerning This Basic  
Raw Material from the Gulf Coast Region**

## **\*MAN MADE MOUNTAINS**



Sulphur from the field collecting stations is delivered to the vats through insulated pipe lines which discharge directly on the vats. The sulphur is pumped at such a rate that the height of the vat is increased only a few inches per day, the slight vertical rise being the result of a large horizontal area which provides maximum cooling surface and ample tonnage capacity. As the sulphur solidifies it gradually builds up into a great block or vat of solid sulphur, which may be as large as 1200 feet long, 50 feet high, and 200 feet wide, and containing as much as half a million tons of sulphur.

The discharge lines are placed so that the liquid sulphur is spread in an even layer over the entire surface of the vat and is permitted to solidify uniformly. If the liquid sulphur is introduced too rapidly or is not properly distributed, pockets of liquid sulphur will be covered by a crust and remain in the solid sulphur. The low heat-conductivity of sulphur might keep such pockets liquid for a year or more.

Loading operations at our  
Newgulf, Texas' mine



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Mines: Newgulf and Moss Bluff, Texas

# Handling Bulk Storage

Multiple shop plan is efficient,  
safe method for stored matter

U. C. Ellis

*Gen. Superintendent,  
Swift & Company, Plant Food Div.*

**H**ANDLING bulk goods in fertilizer plants requires that storage be well planned to accommodate the different products. Since few plants have surplus storage, bulkheads are necessary. The first step toward safety in the construction and removal of bulkheads is that of design—whether it is to be a bagwall, sheath type, bookshelf or other type—the bulkhead must be strong enough to withstand the downward and outward thrust of the product to be stored.

There are many different types of bulkheads in use but probably the three most commonly used are the bag wall, the sheath type, and the bookshelf.

The bag wall was quite extensively used some years ago but has been gradually abandoned until now it seems to be used only in special cases and as a temporary basis. A bag wall is a safe wall if properly constructed. It is built by partially filling bags with the product being stored and laying them flat with the mouth toward the storage pile. The wall must be constructed as the pile builds up.

The product being stored ties in the bags. Safe bag walls must be built on an absolute perpendicular under normal storage conditions. There is always the danger of a backward misstep resulting in a fall and obviously such an accident could result in a fatality.

## Sheath Type Walls

The sheath type wall is an effective and safe type, if properly constructed. It is built by edging boards, usually 2 x 12's, one on top of the other, between two building columns, then tying them to the columns. Frequently a wall of this type is reinforced by the use of a perpendicular bracer of 6 x 8 or 8 x 8 timber and sometimes, depending upon conditions, the wall is further strengthened by running steel rods, usually 1" in diameter, from bracer to bracer through the bay or bin.

The bookshelf type wall has come into quite common use and is as safe or safer than the bag wall or the sheath type. The bookshelf type wall is particularly adaptable where the wall is to be permanent. The main hazards with this type occur where the wall is on an alleyway and entrance must

be gained to the product. This means that the boards making up the wall must be removed as the product is taken from the bin and the employees must work at high levels when removing the boards. If they were to be careless, a serious fall could result.

After a safe design is established, it is then a matter of attitude of employees toward safety, which means that to prevent accidents there should be a well-planned safety program—one that develops a safety conscious organization, an organization that is alert to dangers and respects them.

## Product Cakes

A product that is stored in bulk usually cakes in the pile and requires disintegration prior to removal. This is ordinarily accomplished through the use of explosives, which requires that the plant be equipped to store the explosives and, of course, handle them to the point of use for blasting. This storage and handling of explosives involves hazards, but not serious hazards if reasonable safety practices are followed. Explosives will supply any fertilizer manufacturer with rules developed

to prevent accidents in the storage and handling of explosives. It is advisable to follow such rules.

Again, accident prevention then becomes the matter of a good safety program. If employees are not safety minded, accidents will continue to be caused. Rules alone will not do the job.

### Safety Program

Any fertilizer plant's safety program should include a safety committee comprised of representatives of management and labor. The committee should meet at regular intervals and make a careful safety survey of the plant. A report should be prepared by the committee and submitted to the plant superintendent listing each hazard and including any corrective recommendations advised by the committee.

Management should be sure that all recommendations are carefully considered and, if practicable, corrections should be made before the next meeting of the committee. At

the time of the next meeting, a report should be made back to the committee giving the status of each item.

The personnel of the committee should not be permanent but should be changed from time to time because two different groups making one survey of a plant probably will detect more hazards than one group making two surveys.

The safety committee has another value. It without doubt influences the attitude of employees toward accidents. The employees then realize that the company is in fact concerned about protecting them from injuries and is doing something about it.

### Dangerous Overhangs

When an explosive is used to disintegrate bulk materials in storage bins, all too frequently the blast leaves dangerous overhangs. A steep face on the pile with loose material which is likely to slide at any time also often is present.

Such overhangs and slides are particularly dangerous and hard to cope with because the dangers existing are not always apparent. It is extremely hard at times to determine the condition of a blasted pile even by a thorough inspection, and certainly it is impossible to establish what the hazards are by observing the pile from the ground floor only.

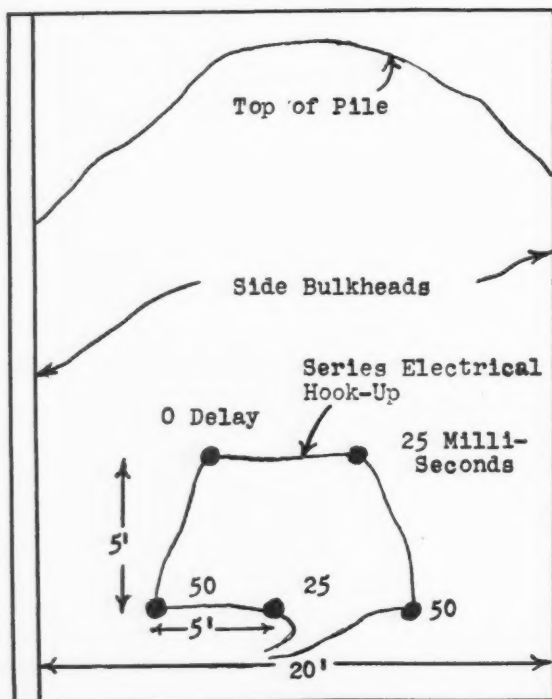
### Slides Cover Men

Many accidents, some of them fatal, have occurred because of overhangs and slides breaking loose and covering the explosives man while he was preparing for another shot by boring a horizontal hole from the floor level. As a matter of fact, the writer is personally familiar with the details of three such fatalities. The name of the company where the three accidents occurred is not important, but the handling is.

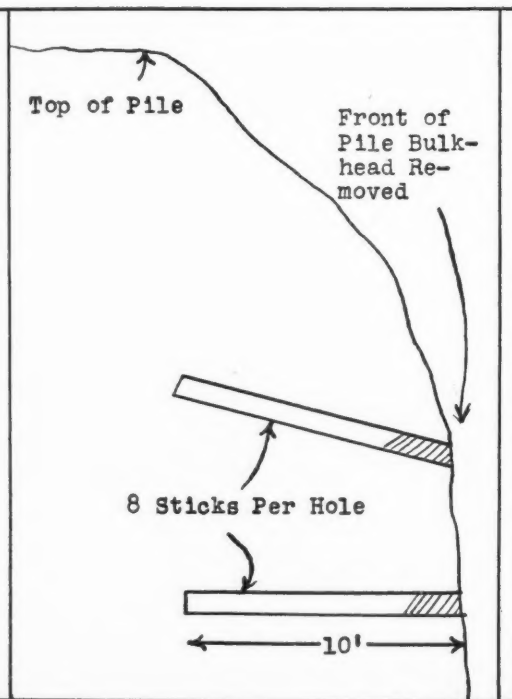
The first accident occurred in an "A" frame building. Super-

## MULTIPLE SHOT METHOD USING DELAYED ACTION CAPS PILE ENCLOSED ON THREE SIDES

Front View of Pile



Side View of Pile





phosphate was being removed with a dragline. The line had cut a trench almost to the floor level. The sides leading up from the trench were quite steep. The dynamite man was in the trench getting ready to make a shot. Some loose material from near the top of the pile slid and covered the employee, suffocating him.

### Second Fatality

The second fatality was in a mill type plant where the product was piled about 20 feet deep. There was an overhang to the pile caused by a blast. The dynamite man started to bore a horizontal hole 4 or 5 feet above the floor level and the foreman in charge of the operation instructed the employee to move over from that point to a safer location—that the overhang was dangerous. The supervisor proceeded to another point and the dynamite man moved a few feet but didn't clear the overhang. It gave way, covering the employee, and he was suffocated. This was in a mixed goods storage section.

### Third Accident

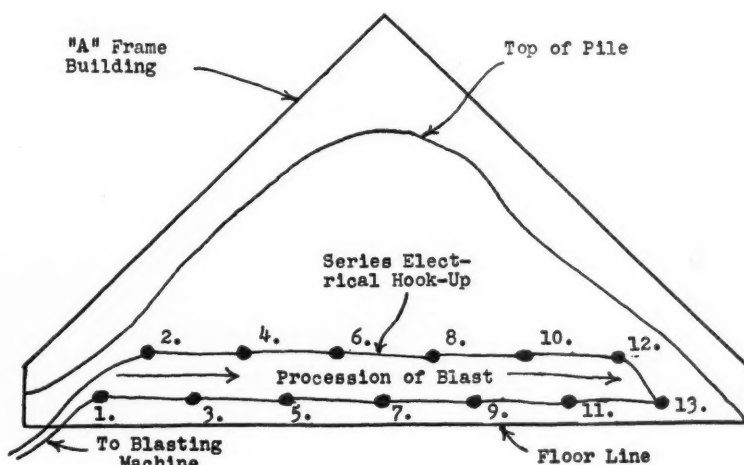
The third fatal accident occurred in a mill type building where superphosphate was stored. The dynamite man was getting ready to make a shot near the base of the pile. The face of the pile sloped back at from 10 to 15 degrees from the perpendicular. The pile had been observed by a number of employees, including a former dynamite man who was himself at one time injured in a slide, and there were no apparent dangers. Yet, within a one-minute interval while the tractor man was on the way to an elevator with a load, the dynamite man was covered by loose material sloughing off and sliding down on top of him. Probably an examination of the top of the pile would have disclosed the danger.

After each one of the fatalities, the company was determined to make its practices in the use of explosives safer. The last fatality brought about not only a determination to make the current practices safer but also a determination to develop a safer method.

### Safe Practices

To make current practices safer, the company called upon the

## MULTIPLE SHOT METHOD IN AN "A" FRAME BUILDING (100 feet wide)



Hole No.	No. of Sticks	Depth of Hole	Millisecond Delay
1.....	7	9 ft.	0
2.....	6	5	0
3.....	12	13	0
4.....	10	8	25
5.....	12	13	29
6.....	10	12	50
7.....	12	13	50
8.....	10	12	50
9.....	12	13	50
10.....	10	12	75
11.....	12	13	75
12.....	6	5	75
13.....	8	10	75

training division of its industrial relations department to prepare a program to deal with the hazards of overhangs and slides.

This program was developed and has been presented at every one of the company's plants where such hazards are a problem. The superintendents of these plants, without exception, have believed the presentation resulted in a higher degree of safety consciousness and consequently less likelihood of accidents. The program required from 45 minutes to an

hour for presentation, depending upon the amount of discussion developed.

### Special Flip-Charts

Specially prepared flip-charts were used in the presentation to emphasize the key points considered essential in the prevention of accidents. One of the flip charts related to boring perpendicular holes. This is a feature of much importance. Whenever a pile to be blasted presents any hazards



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- ★ CONTINUOUS AMMONIATION UNITS
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Coolers  
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Disintegrators  
Dry-Mixing Units  
Dust-Arresting Equipment  
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at all, boring a perpendicular hole is safer. Most of the accidents caused around bulk piles are due to product falling on the employee. Boring perpendicular holes requires that the operator be on top of the product. If an operator is on top of the pile, the pile cannot possibly be on top of the operator.

The second determination, to develop a safer method, was made by asking a number of outside concerns to study the problem. One of the companies, an explosives manufacturer, took a keen interest in the matter and made a study of the problem at one of the bigger plants of the fertilizer company. They recommended that instead of making single shots, a plan using multiple shots with delay action caps be adopted. They demonstrated that a multiple shot program would be safer. Until that time, the company had strictly followed a single shot practice, thinking that firing one shot would be safer than firing a number of holes simultaneously.

### Multiple Shot Plan

The company is adopting the multiple shot program just as fast as necessary equipment can be obtained and personnel properly trained. In addition to going over to the multiple shot plan, the type of explosive was changed from what is ordinarily known as a 20 per cent dynamite to a slower-acting, low-density, high-gas volume explosive. This new program accomplishes to a very great extent the objective of eliminating overhangs and slides. A well planned multiple shot using fast delay action caps leaves the product in a well-fragmented condition, which is much easier to handle than is the case with product from the single shot practice.

### Mixed Goods

Mixed goods stored from 20 to 22 feet deep, in a bay 24 feet wide, bookshelf type bulkheads on either side, was blasted with 39 sticks of powder placed in five holes and fired with three stages of delay. The pile before the shot presented a typical pile face without overhang or visible hazard. After the shot, the product was very thor-

oughly fragmented with no large lumps. The shot had conditioned approximately 175 tons, and the blasted product inclined from the floor level to the top of the pile very evenly over a distance of about 30 feet, making the face of the pile flatter than the angle of repose. There were no overhangs or other hazardous conditions present.

### Advantages of Plan

The indicated advantages of the multiple shot program are about as follows:

1. Safer—Less chance of overhang or dangerous slope being left after blasting.
2. Fewer blasts are necessary because several times as much product is brought down with each blast than is the average when firing single holes.
3. Less damage to buildings and bulkheads.
4. Greater efficiency per unit of explosive used.
5. Lower explosive cost.

### Summary

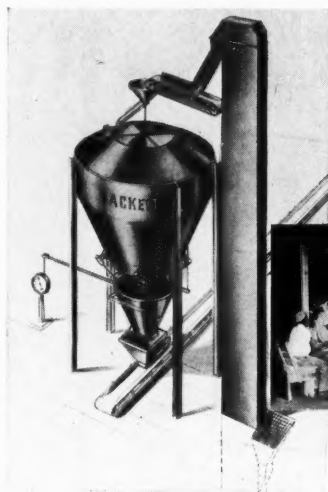
In summarizing, the following points are important:

1. Have a well-planned safety program that includes a safety committee with members from both management and labor.
2. Bore perpendicular holes for single shots.
3. Consider the multiple shot method, but don't attempt it without expert coaching in the technique of handling.

The product will be left in a well-fragmented condition that is much easier to handle than stored bulk material using the old, single shot method. The method is much safer and more efficient for bulk storage.

Undoubtedly there is much more to be learned about the multiple shot, fast delay action cap method, but it seems logical to suppose that the way has been opened to safer handling of bulk goods in fertilizer plants. ♦

## SACKETT FERTILIZER PROCESSING SYSTEMS PAY OFF



These fast fertilizer processing systems have reduced production costs in some plants as much as 65% . . . An estimated cost savings included with a Sackett survey of your production operations may even exceed this figure.

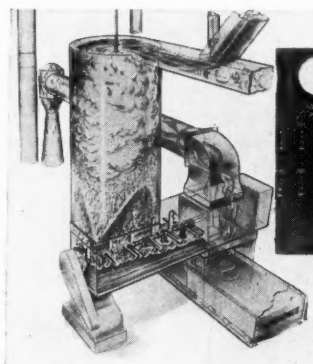
### SACKETT ONE MAN BATCH-WEIGH SYSTEM



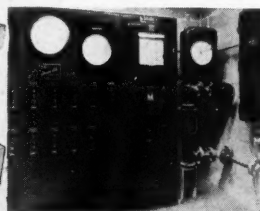
CONTROL PANEL

1. Eliminates waste of manpower.
2. Fast-acting weigh valves and printed weigh record provides more rapid and accurate weighing.
3. Circular design of storage hopper accelerates flow of ingredients through weigh valves . . . no corners or valley angles to retard flow of material.
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5. The installation of this system does not, in any way, disturb existing mixing facilities.

Built in four sizes, 25 tons to 100 tons per hour.



### SACKETT *Super-Flo*... A CONTINUOUS SUPERPHOSPHATE MANUFACTURING PROCESS

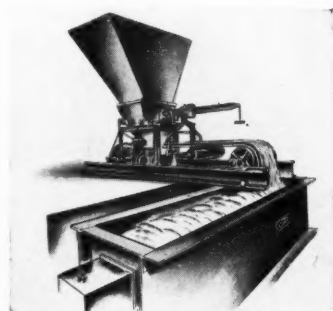


CONTROL PANEL  
Control control panel shown above is nerve center of Super-Flo Process. Plant is operated from this point by one man.

This new Sackett-conceived and developed process produces a superphosphate of premium quality in either powdered or granular form. Its complete mechanization and centralized panel control brings to the industry entirely new conceptions of high production speeds, low manufacturing costs and quality product control.

These Sackett patented processes are built in three sizes, 25 tons to 75 tons per hour.

Exclusive suspended acidulation produces highly converted superphosphate of excellent quality.



### SACKETT CONTINUOUS AMMONIATING SYSTEM

The patented Sackett Continuous Ammoniation System is now being offered in four sizes with capacities ranging from 25 tons per hour to 100 tons per hour. This highly efficient method of ammoniating superphosphates and mixed goods with solutions offers many important advantages and is easily installed in connection with existing basing equipment. Higher ammoniation rates are made possible by its accurate proportioning of solids and solutions and lower reactive temperatures due to its exclusive aerating action which takes place during ammoniation. This system is also built in pressurized design for anhydrous ammonia or solutions having high vapor pressures.



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## Three Elephant Agricultural Pentahydrate Borax

Contains a minimum of 44%  $B_2O_3$  or approximately 121% equivalent Borax. More economical in this concentrated form when used as an addition to fertilizer or for direct application to the soil, to correct a deficiency of Boron. Consult your local County Agent or State Experimental Station.



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# NFA Convention

## Totman Reports Record High For Consumption of Fertilizer

George P. Teel, Jr.

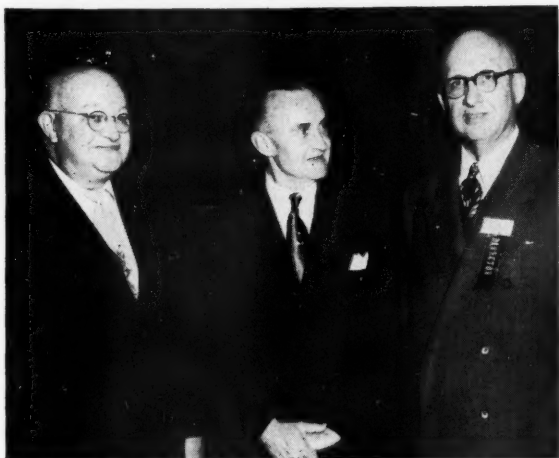
**A**tlanta, Georgia was host to the largest delegation ever to attend a National Fertilizer Association convention, November 12 to 14. Over 500 NFA members were present to hear industry and government speakers.

An address by J. E. Totman, Chairman of NFA Board of Directors and president of Sumner Fertilizer Co., key-noted the convention. He reported that an all time high in fertilizer consumption, 18,300,000 tons, was reached during 1950.

"Safety Is Good Business" was the topic of an address by H. R. Krueger, member of the advisory committee of the National Safety Congress and Director of Technical Service, Phillips Chemical Co. During his talk he described the fertilizer sub-section of the chemical section of the Congress and requested the cooperation of the fertilizer industry in achieving a better safety record.

Members attending the first general session also

Carl E. Veth, Smith Agricultural Chemical Co. and William Mortimer, of Barrett Division, talk with C. R. Martin, right, a member of the NFA board of directors.



NOVEMBER, 1951

heard W. M. Myers, Director of Field Crops Research at the USDA Beltsville Station speak on the "Potentialities of Grasslands."

In his talk, Mr. Totman said that estimates indicate a consumption of 19 million tons of fertilizer in the United States during the fiscal year ended June 30 and said that sales could be expected to reach 19,500,000 tons during the current period.

Totman pointed out that this quantity will not meet the demand or the tonnage that could and should be used to produce the needed crops and adequately maintain soil fertility.

### Nitrogen Situation Not Critical

Referring to the nitrogen situation he said, "there is no apparent serious shortage ahead for nitrogen. In fact, the planting season of 1951-52 should have obtainable at least five per cent more nitrogen than the previous year. It will not all be just where we manufacturers of fertilizer want it, nor will it be in the forms we prefer. Solid forms of nitrogen will be scarce, the increase will be in liquid forms."

In a discussion of the sulfur and sulfuric acid situation he stated that economics, shortage of construction materials and the time element were major factors operating against the success of many projects proposed for alleviating the sulfuric acid shortage.

Totman stated, "Sulfuric acid can be made from gypsum at a price. Pyrites could be burned as a substitute for sulfur in making acid, provided we obtain the pyrites and the furnaces in which to burn them. Either would take a year or more under the present steel emergency."

Commenting on proposals to acidulate with nitric acid or mixtures of nitric acid with sulfuric acid, followed by ammoniation with anhydrous ammonia, he pointed out that the problems of construction materials, operation, and economics remain unsolved in this country.

"In the first place," he stated, "such processes require large amounts of stainless steel, a material

practically unobtainable under present controls. Large tonnages of construction steel, a very scarce product, also would be required."

The potash situation was described as "reasonably satisfactory" with indications that the industry will have about five per cent more than last year.

Krueger emphasized the fact that safety is good business by pointing out the financial savings that can be gained through planned safety programs. He said the manual rates for compensation insurance for fertilizer plants "are the highest of any chemical industry and almost the highest of all industries."

Citing the rapid strides made in mechanization of fertilizer plants, Krueger raised the question: "How much has been done toward saving labor?"

"You and I", he noted, "have seen some of this equipment running over platforms which did not appear safe for even the 'Georgia buggies', for which they were originally intended, or have seen this equipment operating in a dusty passageway which did not have headroom for the operator to work in a normal sitting posture, even if he could have seen where he was going."

#### More Planning Needed

"The point I am trying to bring home", Krueger said, "is that more planning and money should be expended on better passageways, dust elimination, machinery and safety guarding."

In answering critics who have advocated the use of all agricultural facilities for the production of cash crops, Myers said the grasslands of the United States "are the greatest potential resources we have for increased production of livestock feed, and hence of meat and dairy products."

Four government officials were presented in the second general session which covered the topic "The Government and the Fertilizer Industry."

The National Production Authority was represented by Kenneth H. Klipstein, Assistant Administrator for

F. N. Bridgers, left, of Farmers Cotton Oil Co., a board member who has been in the fertilizer industry 50 years, meets with R. F. Fraser, of Ashcraft-Wilkinson Co.



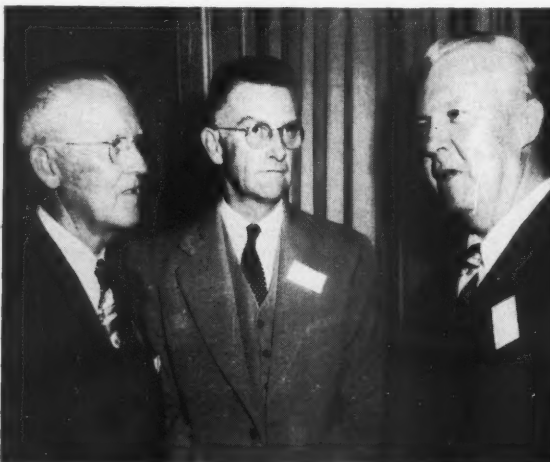
Mrs. J. E. Totman chats with E. M. Kolb, of American Potash & Chem., left, and G. F. Savitz, of International Mineral & Chem., before cocktail party at convention.



C. F. Martin, of Miami Fertilizer Co. and J. G. Nielson and O. D. Culpepper, of Swift & Co., from left, talk between sessions of the NFA annual convention.



L. O. Hinton, of Barrett Division, left, and L. B. Williams, center, of Commercial Fertilizer Co., listen to Edward Sterne Jr., right, of Chilean Nitrate Sales Co.



the Chemicals, Rubber and Forest Products Bureau. Klipstein described the background of M-69, control order limiting use and inventories of sulfur.

Klipstein said that a new control order probably would be issued within three or four weeks. The NPA official felt that, although the next nine months will be the most critical period of the sulfur shortage, conditions will improve through conservation of the material and development of new supplies.

He cited the many and varied uses of sulfur and sulfuric acid to show the difficulties involved in formulating adequate controls. Klipstein showed how the basic materials are used in the production of Freon, rubber, paint pigments, and other industrial needs.

A tailored regulation applying to retail sales of superphosphate and mixed fertilizers was forecast by Cedric G. Gran, Consultant on Agricultural Chem-

icals, Office of Price Administration. He stated that OPS hoped to have the regulation ready by January 1.

Because of the forthcoming tailored regulation, Gran said that his division had requested that the December 19 filing date under CPR 22 be suspended for manufacturers of fertilizer and fertilizer materials.

Reporting on the Industry Advisory Committees, Gran indicated that full cooperation from members of industry must be received if new regulations are adequately to represent the manufacturers. He said that only two thirds of the questionnaires sent to manufacturers of superphosphate had been returned on time and pointed out that the completed forms were necessary if the division were to work efficiently.

### Questionnaire Sent Out

Another questionnaire has been sent to about one third of the mixed goods industry. Gran hopes that the tailored regulation will be ready by January 1.

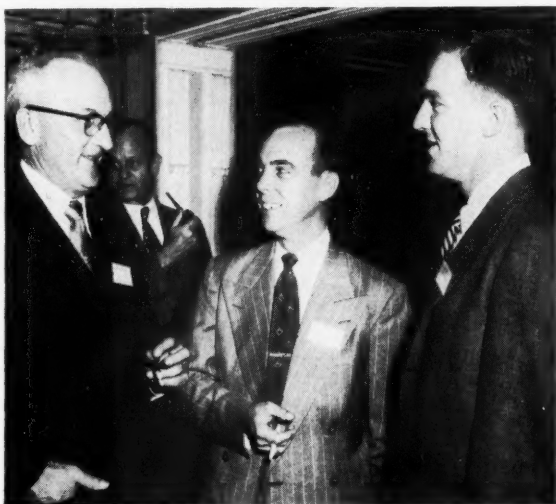
During his talk, Gran presented H. A. Huschke, Chief of the Agricultural Chemicals Branch, OPS, who assisted in answering questions from NFA members at the completion of the scheduled program.

Uranium recovery from the processing of phosphate rock was discussed by Sheldon P. Wimfen, Division of Raw Materials, Atomic Energy Commission. He reported that several fertilizer companies were working on the problem and that one plant, designed to recover by-product uranium, is now under construction in Illinois.

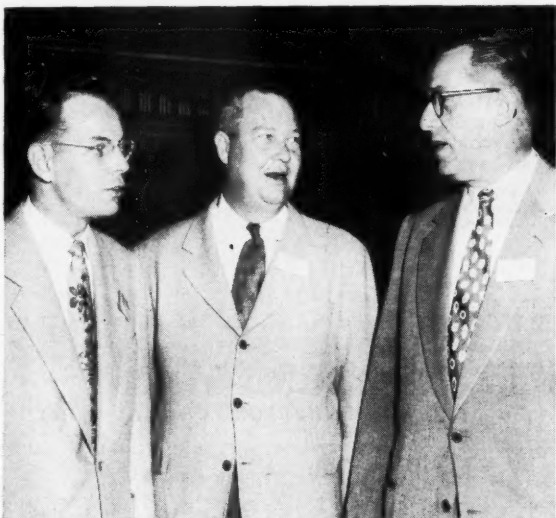
L. G. Porter, Chief of Fertilizer Staff, Production and Marketing Administration, USDA, provided some long range figures on fertilizer needs. He estimated that by 1955 the United States nitrogen requirements will amount to 2,185,000 tons. A similar amount of potash will be required along with 3,500,000 tons of phosphoric acid.

Porter stated that nitrogen production, 500,000 tons short in 1951, will have to be increased at the rate of 100,000 tons per year to keep abreast of population increases. ♦

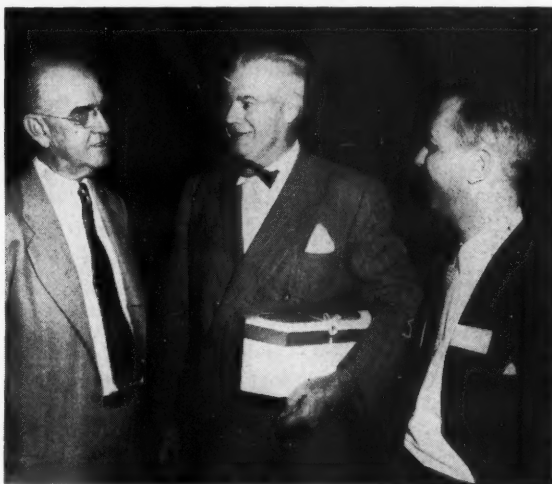
**T. E. Cochran, Temple Cotton Oil Co., W. W. Young, of Swift & Co., and J. H. Drewry, of International Mineral and Chemical Corp., from left, hold a get-together.**

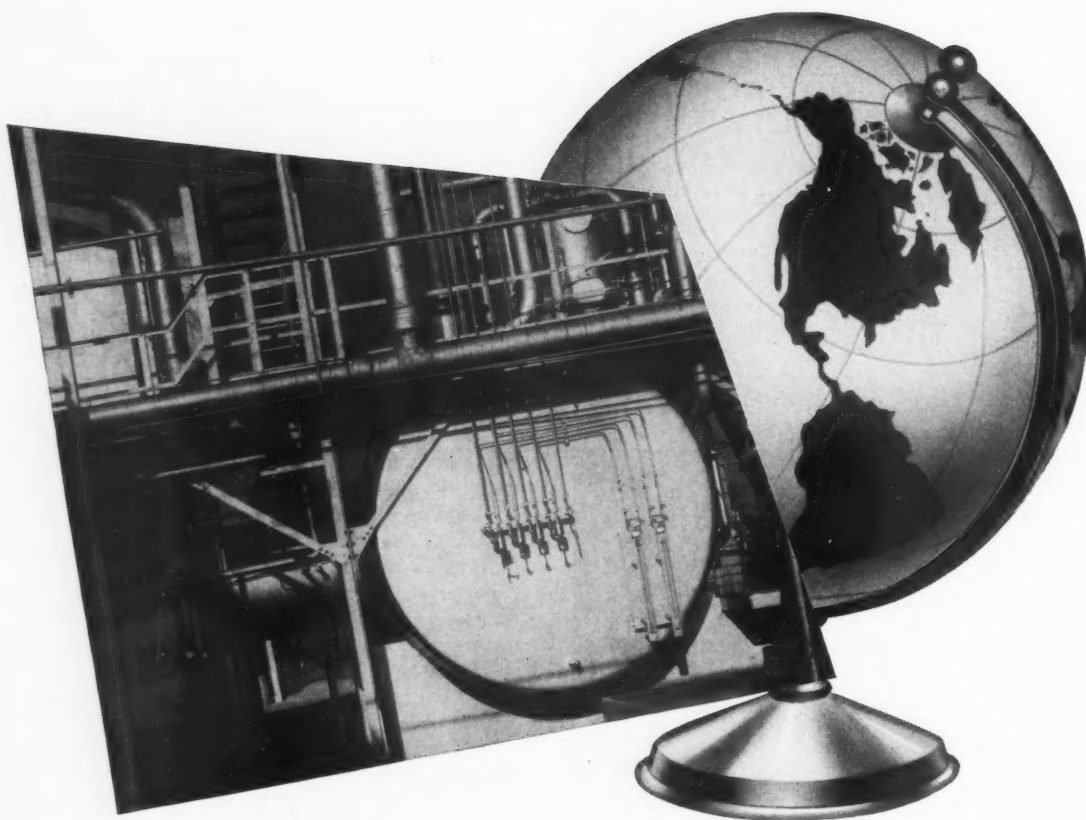


**Fertilizer outlook is discussed by, from left, M. E. Lee, of Bemis Bag Co., A. B. Verdery, of Augusta Fertilizer Co., and E. W. Smith, of Chemical Packaging Corp.**



**Alex M. McIvor, left, and H. Howard McIvor, right, of McIvor & Son, talk with A. A. Green, of Jackson Fertilizer Co., before annual industry dinner in the Biltmore.**





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Approximately 40% of the free world's contact sulfuric acid is produced by Monsanto-designed plants, using Monsanto Vanadium Catalyst. There are more than 250 Monsanto-designed units, using all known raw materials and serving 25 countries. Monsanto's standard designs for sulfuric acid plants offer the fertilizer industry these advantages:

**1. CAPACITY** to meet your needs . . . ranging from five to 500 tons of acid (100%  $H_2SO_4$  basis) daily, with no equipment in parallel.

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**3. EFFICIENCY and ECONOMY.** Monsanto-designed plants deliver top efficiency with low operating and maintenance costs. They produce by-product steam that gives further savings.

If you are interested in increasing your sulfuric acid production or in taking the initial steps to produce your own supply, you can have the benefit of Monsanto's more than 30 years' experience in the design and operation of sulfuric acid plants.

At your request . . . and without cost or obligation to you or your company . . . a Monsanto engineer will bring you full details. Write, wire or 'phone MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

### MONSANTO VANADIUM CATALYST

Monsanto Vanadium Catalyst, produced solely for use in the manufacture of sulfuric acid by the contact method, is highly efficient, rugged, long-lasting. It is used in Monsanto-designed plants in these countries: United States, Canada, Mexico, Cuba, Trinidad, Curacao, N. W. I., Argentina, Brazil, Chile, Peru, United Kingdom, Holland, France, Spain, Italy, Turkey, Egypt, Palestine, Iraq, Iran, India, Sumatra, Borneo, Australia, Japan.



SERVING INDUSTRY... WHICH SERVES MANKIND



# Handling the Absentee

Five things to do when your employee says "My alarm clock didn't go off"

J. E. Bedford

*Associate Professor  
of Merchandising  
Armstrong College*

**A**BSENTEEISM has existed for years, but only during World War II did it come in for top management study. During those hectic days of unaccustomed high wages, long hours of overtime and a manpower shortage, the absenteeism problem came to light in many plants.

Prior to that time the problem wasn't severe enough to make it vital to efficient production. Workers needed every dollar they could get during their period of employment, and the farm chemicals industry had plenty of applicants to step in and take over when an employee failed to report for work. Then, too, the production rush to complete orders wasn't as great.

Then came the hysteria of "What to do about absenteeism?" Everyone got interested in the problem, solutions were given that ranged from plant posters to pep talks to prizes for perfect attendance. Still the problem of the absent worker continued.

Human nature being what it is, there always will be some workers who would rather take a day off than receive a day's pay. There

are others who earn high wages and overtime by working seven days a week. They want time off to spend some of their money. Then, there are others who don't like their jobs. They don't report to work but spend the time looking for another job.

Regardless of the reason for the absenteeism, executives in the farm chemicals industry know that it must be kept at a minimum to keep production on a profitable basis. One man away from production will not close the plant, but he will slow up the production schedule.

Here are five suggestions for handling the chronic absentee:

## 1. Keep Attendance Records

Of course, all fertilizer plants keep records of when an employee works and when he doesn't. Payroll records indicate who is on the job and who isn't so the payroll can be made up properly. But, in many fertilizer plants that is where these records stop. Management knows how many men worked what day, but it does not know who is a chronic absentee.

Records that indicate who is poor in attendance will highlight the trouble makers. Knowing this fact about the problem, something

constructive can be done to eliminate this trouble. When a worker is discovered on the absentee list he can be reminded of the plant's policy on absenteeism.

Some plants follow through on this record of chronic absentees and issue a verbal warning to each worker who is absent two or more times during any month. After the first verbal warning a written reprimand is sent to the foreman, the worker and the union steward for continued absenteeism.

## 2. Investigate

Reasons given for absenteeism run the gamut of human behavior. When alarm clocks were hard-to-get the standing excuse was, "No alarm clock." When transportation vehicles didn't operate on a strict schedule the excuse was "Missed my bus." Other standard excuses ranged from "no baby sitter" to "notice from my draft board," and obviously were just excuses.

However, back of every excuse there is a basic reason—something that the worker blames for being absent. In some cases this investigation will reveal something that can be corrected easily—more parking facilities, or plant recreation—



## MIGRATION...they follow the crops

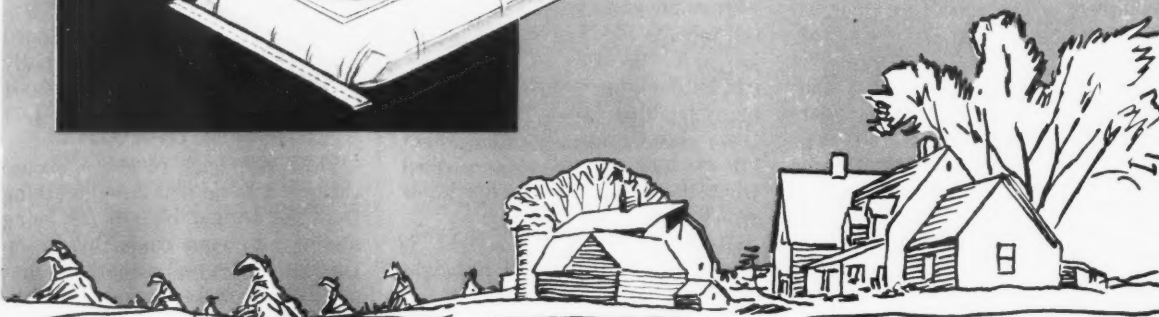
Good fertilizer, packed in Raymond Multi-Wall Paper Shipping Sacks, also follows the crops, year after year. In all parts of the country, wherever bounteous crops are grown, you'll find warehouses and storage rooms filled with fertilizer in readiness for another season.

Specify Raymond Multi-Wall Paper Shipping Sacks for your packing and shipping needs. They are **CUSTOM BUILT** to your requirements in various types, sizes, and strengths. Available printed or plain. They're sift-proof, dust-proof, and water-resistant.

**THE RAYMOND BAG COMPANY**  
Middletown, Ohio



**RAYMOND** Multi-Wall  
paper  
Shipping Sacks









might be some of the ones which would come to light by investigation.

Often a thorough investigation into the causes of why a chronic absentee fails to report for work will indicate something that management could and should do to improve the working conditions around the plant. Perhaps a shift in jobs would solve the problem. Or, perhaps better training would give the employee more interest in his work.

### 3. Advise

Knowing the reasons why an employee is on the plant's chronic absentee list gives the foreman or personnel manager something to use in his advice. Good common sense will solve many problems for the worker and will bring him back to the regular worker classification.

Outlining the benefits of steady work to the employee may solve the problem. If wage increases, promotions and layoffs are based on attendance records the worker should know it. Passing on this information with a spirit of helpfulness will bring many chronic absentees back to work on Monday morning.

Medical advice from the regular plant nurse or the local doctor who handles plant cases may be the answer to the worker's problem. This comes under the technique of helping the worker adjust himself to the job and to the company. When the worker is completely adjusted he will be happier and his production will increase.

### 4. Remind

Most organizations inform all new employees about the rules and regulations when they are first employed. Some farm chemicals plants require new workers to read the company indoctrination manual when they start work, but that is the last time the employee hears of the rules until he runs afoul of them.

Chronic absentees should be reminded of the attendance rules and any penalties when they start to develop into problem cases. Reciting the rules in a firm and fair manner to several employees may be enough. Wash room talk will

pass the word along that there are certain rules about not reporting for work.

As the manpower situation becomes more and more acute, top management hesitates to use reprimand or any other form of discipline. When chronic absentees are not reminded of the rules they will pass the word along to others that the company doesn't enforce this rule about reporting for work. Others will hear of it, see that nothing is done to correct the situation, and the absenteeism problem will grow in the plant.

### 5. Discharge

When the first four steps fail to bring the worker back into line it is probably best to discharge him. One chronic absentee can offset

perfect attendance records by 10 men. Workers who report to work Monday morning even though they could have spent another day fishing are jealous of a worker who doesn't report. They watch to see what is done to the absent worker . . . and, if he continues to get away with this type of performance others will try it. As it continues the plant starts developing an acute case of absenteeism.

Then it is time to use the fifth method . . . firing. Yes, the fifth way to handle the chronic absentee is to fire him. Even in the face of a manpower shortage this method may be the only solution to some individual cases. Firing is brutal, but it is one sure way to cut off this leak of profit and to reduce absenteeism. ♦

---

## Davison Corporation Acquires Fertilizer Plant in Lansing, Mich.

The Davison Chemical Corporation has acquired the Lansing, Mich., fertilizer plant of the Michigan Fertilizer Company, W. N. Watmough, Jr., vice president in charge of Davison's mixed fertilizer division, announced.

Production and distribution from the plant will continue unchanged. The unit is now known as the Lansing Plant of the Davison Chemical Corporation. Bernard C. Manker is manager. The Michigan company will continue to operate its pesticide business.

Retention of virtually the entire Michigan company organization, including sales and office personnel as well as plant workers was announced by Watmough.

The Lansing plant has a total employment of 75 to 90 persons and an annual capacity of 65,000 tons of mixed fertilizer.

Said Watmough, "Davison is happy to acquire this fine modern plant and flourishing business. We look for expansion in Lansing as the necessary materials and equipment become available. This will not be immediately, however. The materials situation is such that it is not possible at this time to decide upon plans and lay out a schedule."

Manker, the new manager, has been in the fertilizer industry 35 years, 23 of them with the Michigan company. Other appointments of former Michigan Fertilizer employees in the new organization include Frank Parmelee, supervisor of sales; William N. Brinson, plant superintendent and Harold Houck, office manager. Vance G. Vasbinder was transferred from Davison's Alliance, Ohio branch to become assistant manager.

The plant in Lansing is the eighth in the Davison organization to be devoted to fertilizers. The main plant of the corporation at Baltimore, in addition, produces superphosphates and mixed fertilizers, and extensive phosphate rock mining and processing facilities are maintained in the Bartow-Lakeland area of Florida.

Other fertilizer plants of the company are located at Columbus, O.; Nashville, Tenn.; New Albany, Ind.; Gretna, La.; Perry, Iowa and Savannah, Ga.

Davison produces catalysts for processing petroleum and for other basic uses for industrial chemical products at Baltimore and Cincinnati. A new plant is scheduled to be built at Lake Charles, La.

**"I get better results from  
top dressing with  
U-S-S Ammonium Sulphate  
than any other  
nitrogen material"**

*- says Basco Coggins  
Reidville, S. C.*

● With the help of U-S-S Ammonium Sulphate, this wheat field produced a yield of 42½ bushels per acre for Basco Coggins, Reidville, S. C. The yield was more than three times his state's 10-year average of 13.8 bushels per acre.

"I find," says Mr. Coggins, "that I get better results from using Ammonium Sulphate as top-dressing on my corn, small grain and pasture grass than any other nitrogen material. Its long-lasting qualities give me bigger yields and keeps my crops and pasture grass greener, longer."

Mr. Coggins plowed under 3000 pounds of limestone and 300 pounds of complete fertilizer per acre. Then he top-dressed 100 pounds of U-S-S Ammonium Sulphate in February and followed with another 100 pounds in March.



## **Bigger yields for farmers ... better business for you**

● All over the United States, experiences like this are convincing farmers there's no substitute for adequate nitrogen supplied by U-S-S Ammonium Sulphate.

And wide-awake fertilizer dealers and manufacturers are capitalizing on the growing demand for adequate nitrogen by offering U-S-S Ammonium Sulphate, both in bags for direct application and as the major nitrogen source in their high-analysis mixed fertilizers.

U-S-S Ammonium Sulphate furnishes crops with

nitrogen when they need it most. It won't leach out of soils during spring rains, yet converts to available form during the warm, moist growing season. It stands up well in storage, handles well in distributing equipment.

Be ready for your share of this business by including U-S-S Ammonium Sulphate in your mixed fertilizers and offering it bagged for direct application. Supplies are somewhat short today, so anticipate your needs in advance. United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.



# **U-S-S AMMONIUM SULPHATE**

**UNITED STATES STEEL**

# Ammoniated Superphosphate

**Authors summarize production of material  
and outline optimum conditions for plant**

**Joe C. Sharp  
and Gordon A. Crowe**  
*Spencer Chemical Company*

## **Conclusion**

**F**ROM the above findings let us repeat conditions which point toward optimum results insofar as lack of reversion and bag-cake are concerned, and describe practical plant operations to bring about these results.

1. Mixtures with moisture content below 6 per cent when anhydrous ammonia was used and 5 per cent where urea solutions were used were found to be inactive at low temperatures.

2. Initial temperatures of ammoniation influence the stability of cooled goods. The reversion where the ammoniation temperature was 90° to 100° C. was only 0.2 per cent whereas it was 2.00 per cent when the ammoniation temperature was kept below 70° C.

## **Moisture Ratio**

3. The ratio of free to combined moisture depends upon temperature. Samples stored at 80° C. were always moist to the touch, even though analysis showed only 3 to 4

per cent water. Sixty-degree samples were appreciably dryer but still damp, and at 40° C. or below the same material was dusty.

4. The crushing pressure required to break caked fertilizer increases with increased moisture content.

Since most grades of fertilizer contain more than 50 per cent superphosphate, the condition of this material is, by and large, responsible for the condition of the final product. Although the addition of ammonia improves the mechanical condition of superphosphate, it does not follow that the condition of any superphosphate will be all that is desired after ammoniation.

It is important to have a superphosphate with a low moisture content to insure good mechanical condition and to avoid appreciable reversion when it is highly ammoniated.

With dry materials the degree of ammoniation is less important. There is more freedom, therefore, in setting up conditions to bring about temperatures of from 90° to 100° C.

Anhydrous ammonia may replace part of the ammoniating solutions, or oxides of calcium and magnesium may be added. In addition to forming more stable compounds, the drying brought about by the high temperatures aids in driving off free moisture which in turn improves mechanical condition.

## **Ammoniation Reaction**

Only free moisture enters into the ammoniation reaction. Consequently, keeping the moisture in the free state with high temperatures allows the reaction to go substantially to completion in a relatively short time.

To do this, it seems that equipment designed to hold the heat and at the same time retain the mixture in a non-drying atmosphere for as long as is practical is desired. The sketch in Figure 1 shows at the end of the pug mill, a retaining cylinder, which also would serve as a seal to prevent the escape of ammonia.

Maintaining the fertilizer in a hot plastic condition until it leaves the cylinder would aid granulation. Aeration immediately after the fertilizer leaves the retaining cylin-

der would promote the formation of firmer particles which favor good mechanical condition.

### Alternate Method

An alternate way of maintaining the product at a relatively high temperature is illustrated in Figure 2. The fertilizer is made in the normal way and placed in the temporary storage bin A. The following day while bin A is being emptied by one man with a Payloader, bin B is being filled.

With the aid of the plow and recycle chute the material is spread thinly enough to bring about a great deal of cooling and drying, especially if the material is moved slowly. This operation could well go on around the clock if that much time is required to hold the move-

ment down to 20 tons per hour or less.

In small plants where it is not necessary to operate at a fast rate to handle the tonnage, it has been found beneficial to hold the batch in the mixer from one to two minutes after the ammonia has been added.

### Recycle Beneficial

A recycle similar to the one shown in Figure 2 also is beneficial if the material is retained in the mixer long enough for the reaction to go substantially to completion. Cooling the material too quickly after the ammonia has been added causes unstable compounds to be formed.

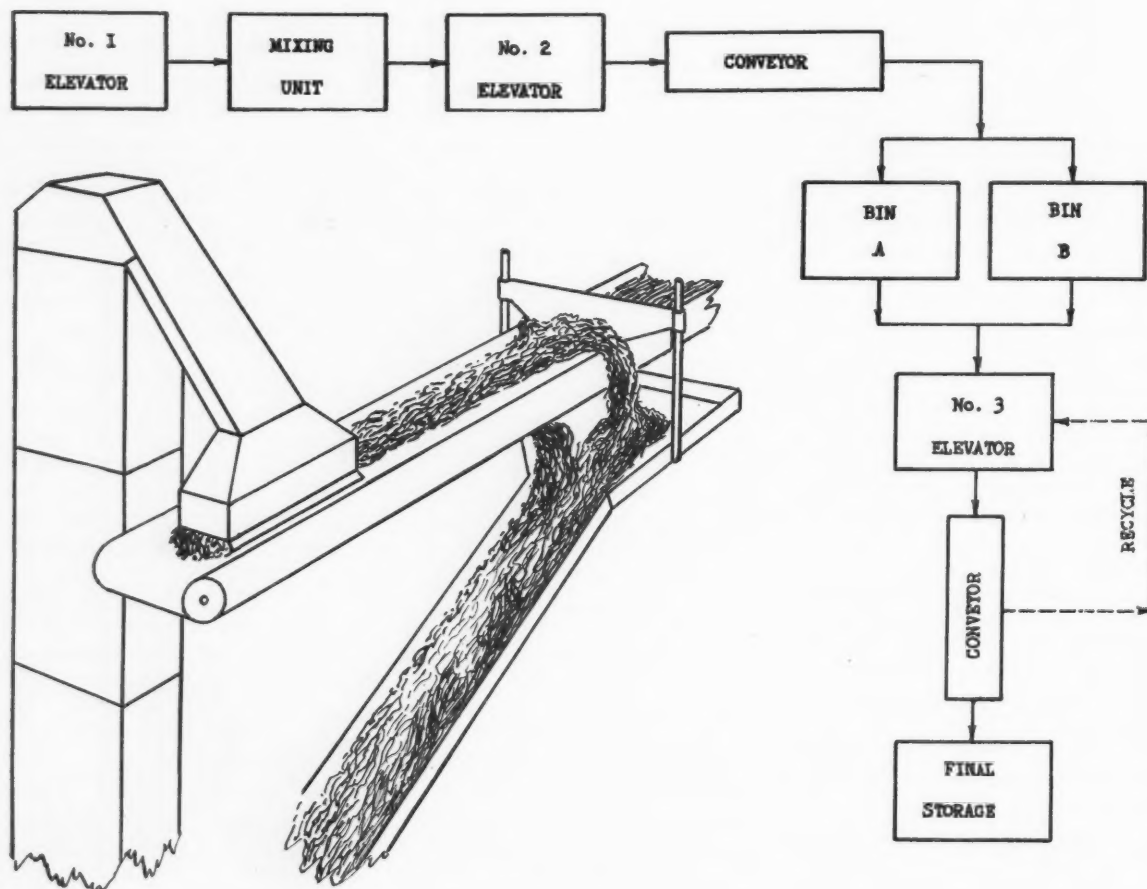
The critical moisture content insofar as mechanical condition is

concerned varies with the constituents of the mixture. If superphosphate with low moisture content is not available, it is possible to overcome to a degree the caking tendency by formulation.

Greater amounts of sulfate of ammonia are recommended with high moisture superphosphate, and oxides of calcium and magnesium are beneficial. To avoid reversion, the degree of ammoniation should not exceed 2.3 pounds of ammonia for each unit of  $P_2O_5$ . Large amounts of sulfate of ammonia usually require longer curing periods to permit reactions to go to completion.

### Plant Tests

Data, selected from recent tests made in various fertilizer plants,



Drawing shows alternate way of maintaining the product at a relatively high temperature. The fertilizer is made in the normal way and placed in bin A. Following day bin A is emptied and bin B is filled



support the above principles. Test 1, containing the least amount of moisture, caked the least of all tests when stored ten bags high. Normal handling caused the cake to break up completely.

Although test 1 contained 5.44 pounds of free ammonia per unit  $P_2O_5$  as compared to 4.71 pounds for test 3, and the storage temperature was 160° F. for test 1 and only 140° F. for test 3, the reversion on test 3 was almost double the reversion on test 1. Test 3 caked badly in the bags and failed to completely break up when the bag was repeatedly dropped and rolled.

### Second Test

Test 2 was cooled within a few minutes after ammoniation. The bag-cake was greater than test 1, but was broken up by normal handling. In other tests where high moisture superphosphate was used, the caking tendency was greatly reduced by obtaining more of the nitrogen from sulfate of ammonia.

Let us take a look at the economics of producing and using both types of superphosphate.

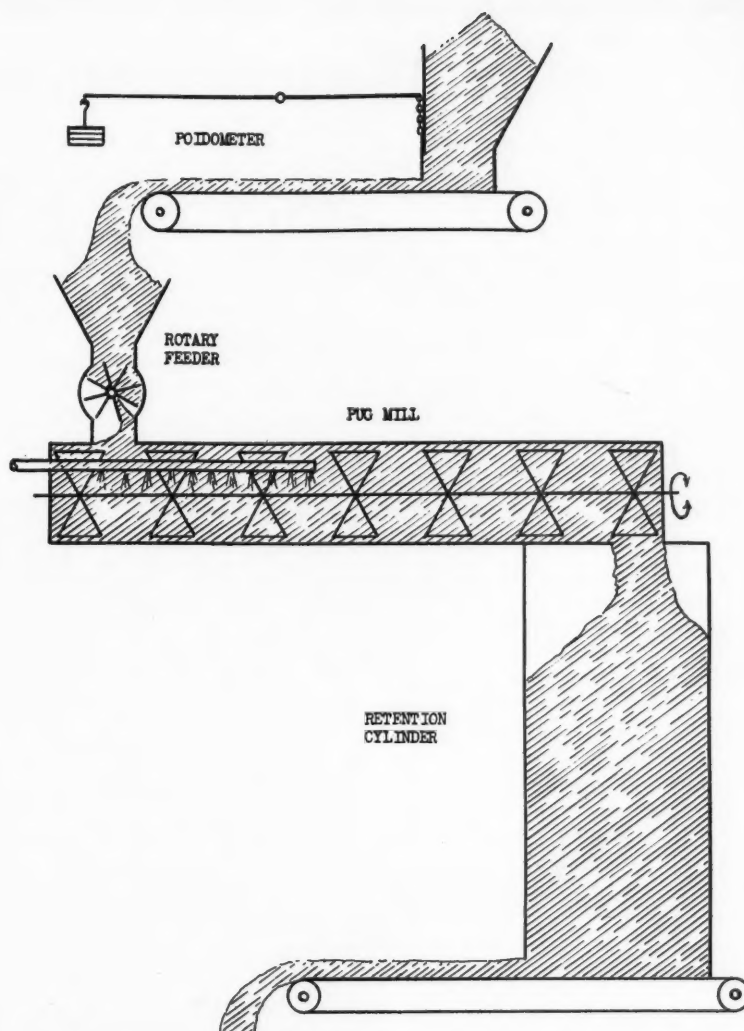
In the acidulation of phosphate rock with sulfuric acid to change the fluorophosphate over to available  $P_2O_5$ , 53° to 55° Bé acid gives greater efficiency than more concentrated acids. But to get the moisture content low enough to obtain optimum results insofar as mechanical condition and lack of phosphate reversion are concerned, it is necessary to use 56° Bé or greater. With equal amounts of 100 per cent sulfuric acid and the same curing time, it is safe to say that one-half unit of available  $P_2O_5$  has to be sacrificed if the more concentrated acid is used.

### Formulating Cost

With that in mind we can reasonably assume the following delivered prices that will enter into the formulating cost for each type of the two superphosphates:

High moisture super-phosphates . . .	\$1.10 per unit $P_2O_5$
Low moisture super-phosphates . . .	\$1.13 per unit $P_2O_5$
Anhydrous ammonia . . . . .	1.18 per unit N
Ammoniating solution . . . . .	1.40 per unit N
Sulfate of ammonia . . . . .	2.56 per unit N

NOVEMBER, 1951



Sketch shows retaining cylinder at the end of pug mill, which would serve as a seal to prevent the escape of ammonia. The new equipment is designed to hold the heat and at the same time retain the moisture

For the dry superphosphate, since reversion beyond one-half unit is not a factor and since it has been found to be a practical amount insofar as plant conditions are concerned, we will use 5 pounds of ammonia for each unit of  $P_2O_5$ . For the high moisture superphosphate, the free ammonia will be limited to 2.3 pounds per unit of  $P_2O_5$ . See Table 5. In addition to intangible advantages such as customer acceptance, the formulating cost is 95 cents per ton lower when the dry superphosphate is used.

This cost relationship is not the same for all grades, but does hold for the greater tonnage sold. ♦

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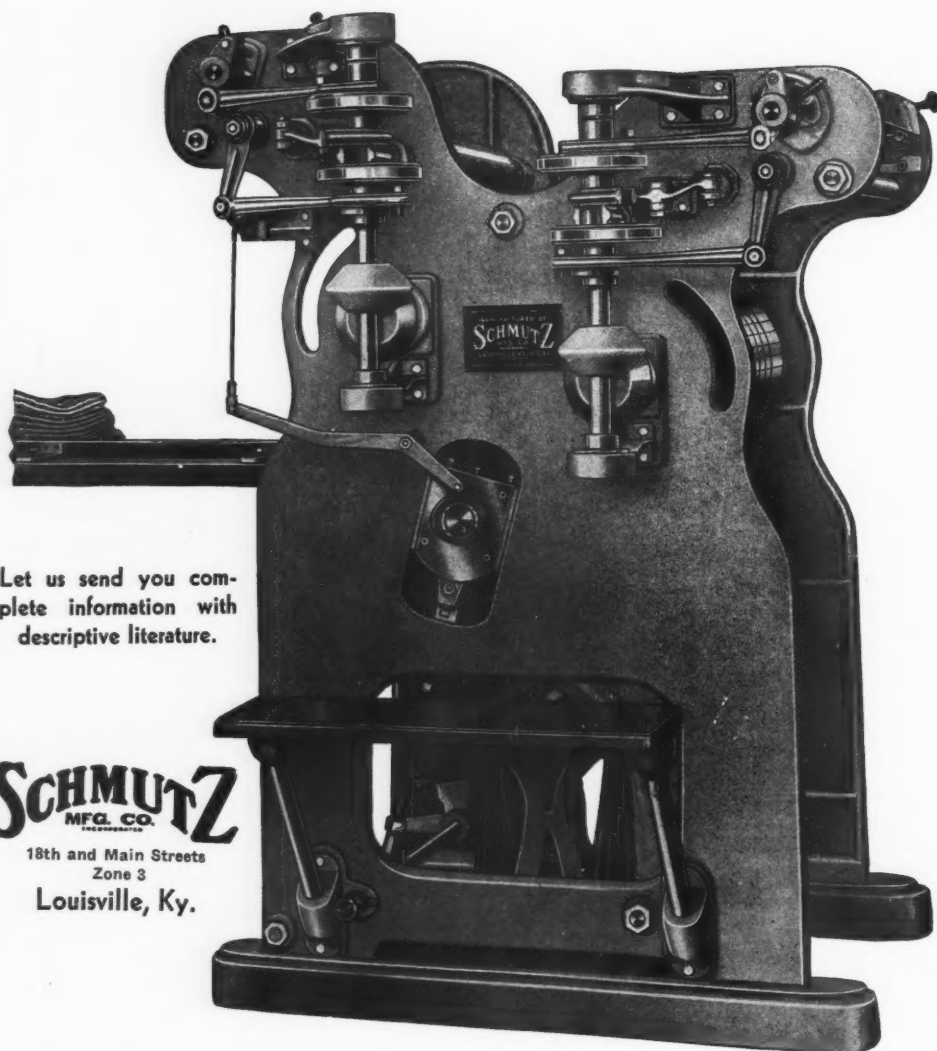
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# FERTILIZER MATERIALS MARKET

## New York

November 30, 1951

### Sulphate of Ammonia

Shipments are going forward against existing contracts with producers sold up for the balance of the fertilizer season. A good export demand exists with little material being offered.

### Nitrate of Soda

The price of this material was recently advanced and demand continues good.

### Ammonium Nitrate

Supplies in some sections were limited and demand continues good with offerings hard to locate.

### Cyanamid

The producer of this material has announced that no more material will be offered and the plant facilities will be given over to the manufacture of certain war materials.

### Nitrogenous Tankage

Offerings of this material are rather scarce and demand is good with prices ranging from about \$4.90 (\$5.95 per unit N) for domestic material to \$6.25 (\$7.59 per unit N) for imported material.

### Castor Pomace

Producers are back in production after having been shut down for about six weeks but are not offering any material as they still have some old contracts to fill. The price remains the same at \$37.25 per ton, f.o.b. production points.

### Organics

Organic fertilizer materials were mixed as far as prices were concerned. While animal by-products showed a slightly easier price tone, vegetable meals were selling at ceiling prices and were hard to obtain. Soybean meal was sought at the ceiling price of \$74.00 per ton, f.o.b. Decatur, Ill., in bulk but no material was available before

NOVEMBER, 1951

March shipment. Linseed meal was sold up and practically unobtainable for any shipment at ceiling prices. Cottonseed meal was difficult to locate for nearby shipment but some future material was being offered. Tankage last sold at \$8.00 per unit of ammonia (\$9.72 per unit N), and blood the same price, f.o.b. Eastern shipping points.

### Fish Meal

Menhaden fish meal was difficult to locate because the fishing season over in the North. Sizable quantities of imported fish meal have been arriving at various Northern points, which has helped ease up the situation.

### Bone Meal

This material is very strong and hard to locate. Feeding bone meal has sold as high as \$80.00 per ton at Eastern points and raw bone meal is offered at \$72.50, f.o.b. shipping points, in limited quantities. Demand continues heavy from both the fertilizer and feed trade.

### Hoof Meal

A slightly stronger tendency was noted in this material with last sales on basis of \$7.50 per unit of ammonia (\$9.12 per unit N), f.o.b., Chicago. Some imported material was offered at about the same price.

### Superphosphate

With leading producers sold out for the balance of the year, it is difficult to secure offerings in any direction and some buyers find themselves short. Triple superphosphate still continues in demand from various sections.

### Potash

Various offerings of imported muriate and sulphate of potash are being made at competitive prices and some sales have been effected recently. Domestic producers still remain sold out for the balance of the season.

## Charleston

November 30, 1951

The prime problem for fertilizer manufacturers today is the quantity of superphosphate that will be available. Next in line is nitrogen, particularly ammonium nitrate and sulphate of ammonia. Potash in the Midwest also is short.

**Organics.**—Organics for fertilizer use are in rather quiet market position with some limited supplies of domestic nitrogenous available for Spring movement. Prices of domestic nitrogenous are nominally \$4.25 to \$4.90 per unit of ammonia (\$5.16 to \$5.95 per unit N), bulk, f.o.b. shipping point. Practically no offerings of imported nitrogenous in market.

**Castor Pomace.**—Production of domestic castor pomace is very limited and the prospects for future supplies are expected to be rather small. Current price is \$35.25 per ton in paper bags for material guaranteed minimum 6.75 per cent ammonia. Imported material is offered at prices varying around \$45.00 to \$48.50, ex vessel Atlantic ports.

**Dried Blood.**—Unground dried blood in bulk is quoted at around \$8.25 per unit of ammonia (\$10.02 per unit N), f.o.b. Chicago and the New York market is around \$8.00 (\$9.72 per unit N), with rather little trading noted.

**Potash.**—Demand is strongly tempered somewhat in certain areas by shortage of superphosphate. Prices remain firm and unchanged. Movement is steady from domestic sources and good supplies of imported material arrive from time to time.

**Ground Cotton Bur Ash.**—This source of potash, primarily in the form of carbonate of potash, is available in fair quantity for prompt delivery and future shipment. Best productions test approximately 40 per cent  $K_2O$  and compare in delivered cost favorably with sulphate of potash.

**Phosphate Rock.**—Movement is steady against domestic contracts

and prices remain unchanged.

**Superphosphate.**—Practically no surplus supplies of normal or triple superphosphate are in the market, which is described as very tight. Shortages in many areas are caused by the fundamental shortage of sulphur and sulphuric acid. Prices are at ceiling levels.

**Sulphate of Ammonia.**—Supply position continues tight and demand active. Prices range from \$40.00 to \$45.00, f.o.b. shipping point, in bulk.

**Ammonium Nitrate.**—Demand is far in excess of supply, maintaining the market in tight position. Canadian material still sells at \$69.50 and domestic material at \$61.00 to \$63.00, f.o.b. shipping point, in bags.

**Ammonium Nitrate Lime.**—Effective December 1st, the price is advanced \$2.50 per ton f.o.b. Hopewell, Va., making the current price \$51.00 per ton in bags and \$47.00 in bulk.

**Nitrate of Soda.**—Demand continues in seasonal dimensions with supplies adequate.

## Philadelphia

November 30, 1951

Outside of the tight position in superphosphate, the raw materials supply situation does not seem to be critical. Blood and tankage are in ample supply, although bone meal is somewhat scarce. The 20.5 per cent nitrogen grade of ammonium nitrate has been advanced \$2.50 per ton, making the present price \$47.00 in bulk and \$51.00 in bags, in carloads at the producing plant. Cyanamid no longer is to be had for fertilizer purposes.

**Sulphate of Ammonia.**—Position is reported tight with production moving directly to consumers and no accumulation of stocks. Synthetic grade is exceedingly scarce.

**Nitrate of Soda.**—Supply is ample to meet all requirements and the demand is gradually improving.

**Blood-Tankage-Bone.**—Blood and tankage are considerably easier at \$7.75 to \$8.00 per unit of ammonia (\$9.42 to \$9.72 per unit N),

but bone meal continues scarce at \$72.50 to \$77.50 per ton.

**Castor Pomace.**—This is again in production but there are at present no offerings in the market.

**Fish Scrap.**—The supply position is very tight with limited quotations at ceiling prices.

**Phosphate Rock.**—Movement is principally against contracts and the demand is keeping up well with the supply.

**Superphosphate.**—The supply situation is becoming very tight and spot material is extremely scarce. Prospects are that the problem will get worse as the season advances.

**Potash.**—While domestic production is well under contract, calls for delivery are not too active, and there is no difficulty in keeping up with the shipping schedule.

## Davison Corp. Will Granulate

Conversion to gradulated mixed fertilizer is being completed in all mixed fertilizer plants of the Davison Chemical Corporation, following extensive success with the material produced by a special process in its plants in Columbus, Ohio, and Perry, Iowa.

W. N. Watmough, Jr., vice president in charge of the fertilizer division, said the company's fertilizer plant at Curtis Bay, Baltimore, will be converted by the end of this year.

Davison's Perry plant has been completely converted and the Columbus plant, now 70 per cent converted, will be entirely on granulated sometime next year.

Watmough said the product has a high degree of homogeneity. Each granule produced by the new process carries in predetermined proportion the plant foods specified in the formula.

"Farmers like the new product," Watmough said, "because it feeds evenly and without clogging through their drilling machinery and does not require cleaning of the fertilizer box after application."

## MARIETTA air cell silos CAN BE ERECTED THE WAY YOU WANT THEM!

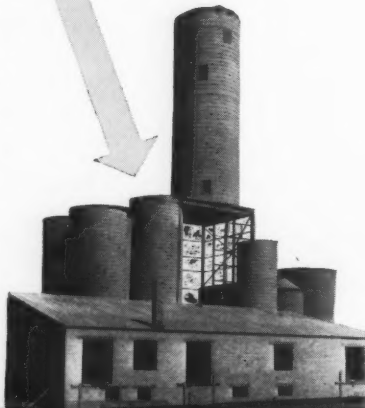
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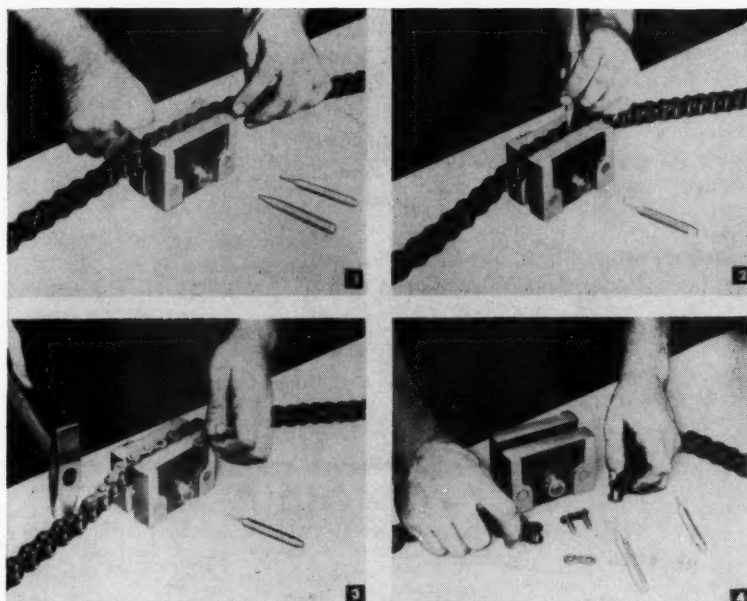
# Industrial News

*New Products*

*New Plants*

*New Appointments*

## Baldwin-Rex Chain Vise



Four steps in using Baldwin-Rex Chain Vise. 1. Chain is placed in vise. 2. Pins are struck and 3. outside plate is removed. 4. Chain is separated.

A simplified way of disassembling, repairing or connecting roller chain is provided by the use of the new Baldwin-Rex Chain Vise, recently developed by the company. The vise makes it possible to take apart single or multiple strand roller chain in a few minutes and with ease.

The vise is made of forged steel with hardened jaws especially adapted to various chain sizes.

It is made in two sizes; No. 1, for single strand roller pitch chains from  $\frac{1}{2}$ " through 1" in pitch—for double pitch chains of 1",  $1\frac{1}{4}$ " and  $1\frac{1}{2}$ " pitch—and for double strand chains of  $\frac{1}{2}$ ",  $\frac{5}{8}$ " and  $\frac{3}{4}$ " pitch. Baldwin-Rex Chain Vise No. 2 is intended for single strand chains of 1" through 2" pitch and for double strand chains from 1" to 2" pitch.

Approximate adjustments are

made before the chain is inserted, permitting rapid clamping.

The Baldwin-Rex vise permits stocking the most efficient coils for every requirement, the company claims. Instead of keeping dozens of different lengths of chain of a given pitch, to anticipate every requirement, the vise will permit stocking of one 250 foot reel of  $\frac{1}{2}$ -inch pitch chain and still meet every need promptly.

In using the vise, the number of links required first is determined and the total length to be cut from the reel is measured. The chain is placed in the vise and is struck with a blunt-end punch to remove the outside plate. After this is done, new links can be added.

For further information on the roller chain vise, fill out a **Reader's Service Card**, and ask for 11-1.

## Penn Salt Plans Better Facilities

New improvements, costing an estimated \$8,000,000, will be made by the Pennsylvania Salt Manufacturing Company as the second major step in the development of its Calvert City, Ky., works.

The company will add new facilities, including an electrolytic chlorine-caustic soda unit, at the Kentucky plant.

Completion of a hydrofluoric acid and sulfuric acid plant in 1949 on its Tennessee River location near TVA's Kentucky Dam was the first step in the development programs. These facilities were expanded by the addition, in 1950, of a unit to produce end products from captive hydrofluoric acid.

Four basic elements—hydrofluoric acid, sulfuric acid, chlorine and caustic soda—will be combined at one works with the addition of the unit. This will be the first combination of these four products in one works in the United States, the company announced.

The Air Reduction Company is building a calcium carbide and acetylene plant in the same area in the development of Calvert City as an integrated center of chemical industry.

Further chemical production probably will be attracted to the area by the availability of such basic chemicals. The B. F. Goodrich Company also has announced plans to build a vinyl chloride plant on property adjacent to that of Pennsalt and Air Reduction.

## NPA Appoints Hebbard

The National Production Authority recently named George M. Hebbard as deputy chief of the inorganic and agricultural chemi-

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## For "high-nitrogen" fertilizer... use **Koppers Ammonium Sulphate!**

● Koppers offers a good commercial grade of ammonium sulphate—the ingredient that is so essential to fertilizer because of its high nitrogen content.

KOPPERS COMPANY, INC.  
Tar Products Division  
Pittsburgh 19, Pa.



#### CHARACTERISTICS

Koppers Ammonium Sulphate comes in crystals with low free-acid and moisture content. The nitrogen content is guaranteed to be not less than 20.5%.

#### SHIPMENT

From St. Paul, Minn. and Kearny, N. J., Koppers Ammonium Sulphate is shipped in 100 lb. and 200 lb. bags—also in boxcars and trucks. From Granite City, Ill. and Midland, Pa., it is shipped only in boxcars and trucks.

cals branch of the chemicals division of NPA.

Hebbard is on leave as vice president of Davison Chemical Corporation. He will assist Frederic Arden, chief of the branch.

### Entomology Fellowship

A research fellowship of \$1,500 established by the Ethyl Corporation, will finance special studies in entomology at Rutgers University.

Dr. William H. Martin, dean of the College of Agriculture and director of the Agricultural Experiment Station, announced establishment of the fellowship. He said the funds will be used to investigate the effect of insecticides upon certain metabolic processes in insects. Initial research will be conducted on certain enzymes involved in respiratory metabolism because a large number of insecticides appear to interfere with these metabolisms.

George T. Fisher, of Pt. Pleasant, a graduate student, has been assigned to the project.

### Pricing Option Extended

#### For Fertilizer Manufacturers

Manufacturers of superphosphate and mixed fertilizers, nitrogen compounds and petrochemicals were given an indefinite extension of the option of pricing their products either under the General Ceiling Price Regulation or CPR 22.

This provision was made in amendment 4 to Supplementary Regulation 12, CPR 22, issued November 30.

The option was extended, OPS explained, because some of the projected tailored regulations have not yet been completed, while still others have not been undertaken.

### Research Program Reviewed

The Radiophosphorus Research Program, supported in part by the fertilizer industry, was reviewed by the USDA, Bureau of Plant Industry, Soils, and Agricultural Engineering at the Plant Industry Station, Beltsville, Md., December 19.

NOVEMBER, 1951

Regional reports were read at the conference and a resume of the Radiophosphorus research program was given by Dr. F. W. Parker.

### Large Maintenance Display Is Scheduled for January

The biggest display of maintenance aids ever assembled will be exhibited at the Plant Maintenance Conference and Show in Philadelphia, January 14-17.

More than 6,000 machines and products useful in various aspects of industrial maintenance will be on exhibit in Convention Hall. Executives will have an opportunity to see most of the machines and products in actual use. Many of the exhibits will be items that are being introduced to industry for the first time.

More than 14,000 executives from all parts of the country are expected to attend the four-day conference. In addition, more than 30 foreign countries are expected to be represented at the program.

A conference on plant maintenance will be conducted concurrently with the show. Leading the discussions will be 57 industrial leaders from many of the nation's outstanding companies. "Plant Maintenance in National Defense" will be the theme of a talk by Manly Fleischmann, administrator, Defense Production Administration.

Of special interest to the farm chemicals field will be conferences on materials handling and chemicals.

L. C. Morrow, consulting editor of "Factory Management & Maintenance," is general chairman for the show. Exhibits will be presented by 225 manufacturers. Special emphasis will be placed on preventive maintenance.

### Big Ammonia Compressor Planned for Monsanto Plant

Carrier Corporation announced recently it would install the first large centrifugal ammonia compressor ever to be used in the United States.

The compressor will be installed at the Monsanto Chemical Company plant, Nitro, W. Va. A five-

stage centrifugal compressor driven by a 600 h.p. motor has been scheduled for the Monsanto plant to double the capacity of an existing reciprocating ammonia system.

It will serve as a low stage compressor in the refrigeration plant, taking the ammonia gas at 25 pounds suction pressure and discharging it to the high state at 75 pounds. Addition of the centrifugal unit will increase system capacity from 400 to 800 tons.

Simplicity and low operating and maintenance costs were given as the reasons for installation of the new unit.

### Copper Sulfate Production Up

Copper sulfate production in October was the highest for any month in 1951 except May, the Bureau of Mines, U. S. Department of Interior, reported.

Production rose 14 per cent in the month. Shipments were 14 per cent less than in August and the lowest since 1949. Stocks rose 66 per cent and were sufficient for almost a month's requirements at the October shipment rate.

### Fertilizer Tax Tag Sales

#### Show Increase in October

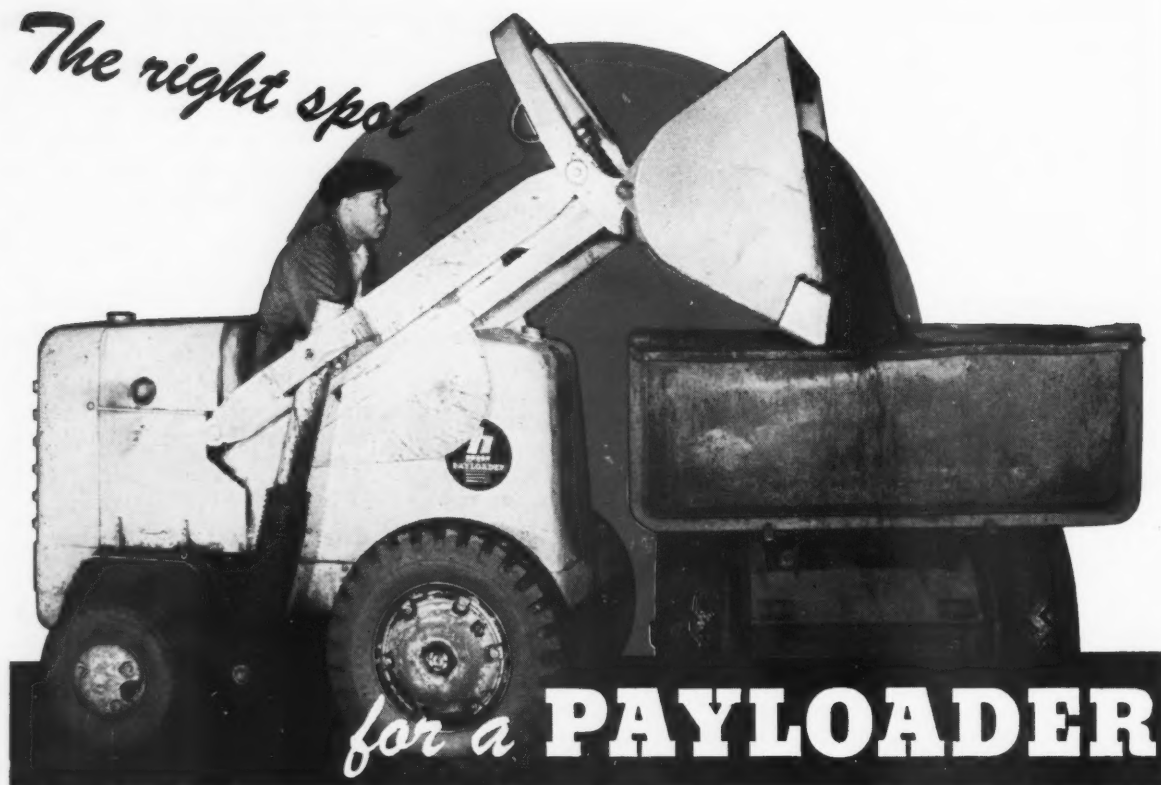
Sales of fertilizer jumped 36 per cent in October over the same month a year ago, according to the sale of tax tags and reports of shipments. The National Fertilizer Association reported a rise from 443,892 equivalent tons to 602,356 tons. The increase in sales will help offset the 19,000-ton deficit for the first quarter of the fertilizer year, beginning July 1, 1951, compared to July 1-September 30 period in 1950.

Records for the first three quarters of this year show a 480,000 ton increase over the same period in 1950.

### Trichlorobenzene Production Started by Diamond Alkali

Commercial production of technical trichlorobenzene has been started in the Houston (Tex.) plant of the Kolker Chemical Works,

*The right spot*



## *for a* **PAYLOADER**

What is the right spot for a PAYLOADER? It's any place inside your buildings or in the yard where bulk materials are being handled by laborious or other obsolete methods. Thousands of these special tractor-shovels are in "right spots" today cutting costs, solving manpower shortages and increasing output.

PAYLOADERS are able to pay for themselves in a few months because they are designed for the specific job of handling bulk materials of all kinds — loading, unloading, scooping, lifting, carrying, dumping and spreading. Outstanding reasons for the performance and acceptance of PAYLOADERS include: short, compact, space-saving design; multiple reverse speeds; large pneumatic tires that permit operation indoors and outdoors . . . on paved or unpaved areas; simple, easy operation; complete hydraulic bucket control.

The 12 cu. ft. model HA shown is an outstanding box car unloader. It is the smallest of six PAYLOADER sizes which range up to 1½ cu. yd. bucket capacity. Every PAYLOADER is backed by 30 years of manufacturing experience and by a world-wide Distributor service organization. The Frank G. Hough Co., 702 Sunnyside Avenue, Libertyville, Illinois.

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- Load box cars.
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- Charge mullers, tumbling barrels.
- Lift-haul-push-pull.
- Stockpile coal, coke.
- Remove snow.



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Inc., subsidiary of the Diamond Alkali Company, of Cleveland.

The product has a boiling range of 210 to 230 degrees centigrade, a specific gravity of 1.463 and a freezing point of eight degrees centigrade, according to the company. The material is available in drum and tankcar quantities.

#### Dieldrin Is Registered

Dieldrin recently received federal registration for control of the Red Harvester Ant, the Julius Hyman company announced. The ant is found generally on the western portion of the United States with more intensive infestations in the Southwest.

Dieldrin is recommended for alfalfa, seedling cotton, small grains and non-crop areas for control of the ant.

#### Lightweight Hand Sprayer Sought for Armed Forces

The farm chemicals industry can do the National Inventors Council and the armed forces a big favor.

The council announced recently that it wants a light, durable, cor-

rosion-resistant, hand-operated sprayer for spraying military quarters with insecticide.

Technical requirements for the sprayer are described in a "Defense Problem Sheet," which is available from the council. The National Inventors Council is a voluntary group of scientists, inventors and industrialists with Dr. Charles F. Kettering, former head of research at General Motors Corporation, as chairman.

#### Stauffer Testing New Substitute for Sulfur

A new Herreschoff pyrites roaster is being tested by Stauffer Chemical Company, San Francisco, at its Richmond, Calif., sulfuric acid plant. The construction of facilities by the company to utilize pyrites as a substitute for a portion of the sulfur used at the plant was started a year ago.

#### Power Shortage Hits Production in Japan

Japanese production of ammonium sulfate in October fell short of the goal set by the government's ministry of agriculture and forestry.

A goal of 145,000 tons was set but the nation produced only 126,000 tons, the ministry reported. The production of calcium cyanamid also fell short of the government goal. Production totaled 23,500 tons of the substance, 9,500 short of the goal of 33,000 tons.

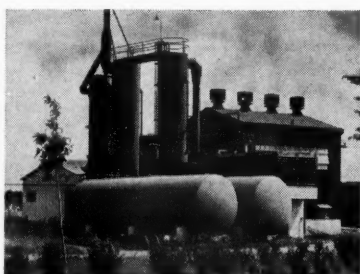
An acute power shortage, which still is plaguing industry in Japan, was largely responsible for the failure to meet production goals, the ministry stated.

#### Wyandotte to Handle Sale of Pesticides

Ar. entry into the industrial insecticide market is planned by Wyandotte Chemicals Corporation, the company announced. The industrial insecticide sales department of the company will handle the sales of benzene hexachloride and related products.

#### Hercules Plans Construction Of Henderson, Nev., Plant

Plans for the construction of another plant for the manufacture of toxaphene has been announced by



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NOVEMBER, 1951



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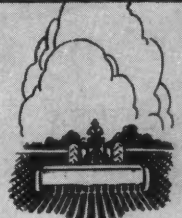
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Sulphate—90-95%  $K_2SO_4$

*Western Germany production*

SYNTHETIC NITROGEN PRODUCTS CORPORATION

285 Madison Avenue, New York 17, N. Y.

the Hercules Powder Company. The new unit will be built at Henderson, Nev., near Las Vegas. More than \$2,500,000 will be spent for the added facilities, the company announced.

The company developed the pesticide in 1947. It has gained wide popularity since that time and now is recommended for the control of more than 80 insect pests.

Construction of the plant will start immediately, and it is expected to be completed early in 1953. It will require an operating force of 60 to 70 persons.

The site is adjacent to the plant of the Stauffer Chemical Corporation, which will supply chlorine required in the manufacture of toxaphene.

The Henderson plant will be the third toxaphene unit to be built in the United States. Other plants are located at Brunswick, Ga., and Hattiesburg, Miss.

#### Chile Dollar Sale Reduced

As a result of negotiations between the government of Chile and the nitrate industry, the obligatory sale of dollars to the government will be reduced for the 1950-1951 nitrate year to \$20 per

ton on an estimated production of 1,600,000 tons.

Further government aid may be forthcoming to the nitrate industry as a result of the competition of synthetic nitrogen products and increasing Chilean production costs, the government announced.

### Fincher Promoted



Robert K. Fincher

Appointment of Robert K. Fincher as assistant general manager

of the Memphis chemical plant of Quaker Oaks Company was announced recently by Dr. Homer R. Duffey, manager of the chemical division of the company.

Fincher has been acting assistant plant manager since July 1. He joined the company as manager of the engineering department of the Memphis Chemical plant in 1946.

The new assistant general manager had been a test engineer for the Memphis Power and Light company and assistant power superintendent of the E. I. duPont de Nemours & Company prior to joining the Memphis plant.

#### Soil Microbiologist Retires

A soil microbiologist for 40 years in the U. S. Department of Agriculture retired recently. Dr. Nathan R. Smith, well known in various parts of the world as a soil authority, had done research on soil bacteria and fungi. He also was active in various scientific societies and in keeping certain classified information available for maximum usefulness to investigators.

Smith was born at Whitehall, N. Y., and was graduated from the University of Vermont.

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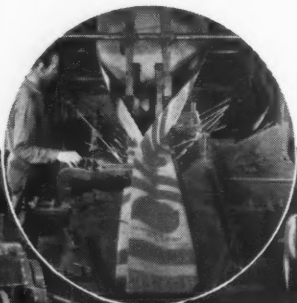


There's  
more  
than  
meets  
the  
eye  
in



## HAMMOND Multi-Wall BAGS

Insert shows intricate machinery for tube and gusset formation. Lower photo shows "tubes" coming off large tubers, from which they are conveyed to sewing machines, where they are made into Sewn Type Multi-Walls.



HIGHEST QUALITY PAPERS AND MATERIALS

MODERN MACHINES—SKILLED PERSONNEL

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OPEN MOUTH  
SEWN BOTTOM

Satisfied customers in the industries we serve know that all multi-wall bags are not alike. The combined efforts of progressive management, conscientious and thoroughly trained personnel, and expert sales engineers who thoroughly understand the problems of shipping hundreds of products—are the primary reasons for the superiority of Hammond Multi-Wall Bags. Constant research, improvements in papers and bag construction for specific requirements provide Better Bags for shipping cement, flour, fertilizers, chemicals, potatoes, food, feed, plaster, lime, insulating materials, and hundreds of other products. Write for booklet—"To Serve You Better with Hammond Multi-Wall Bags."

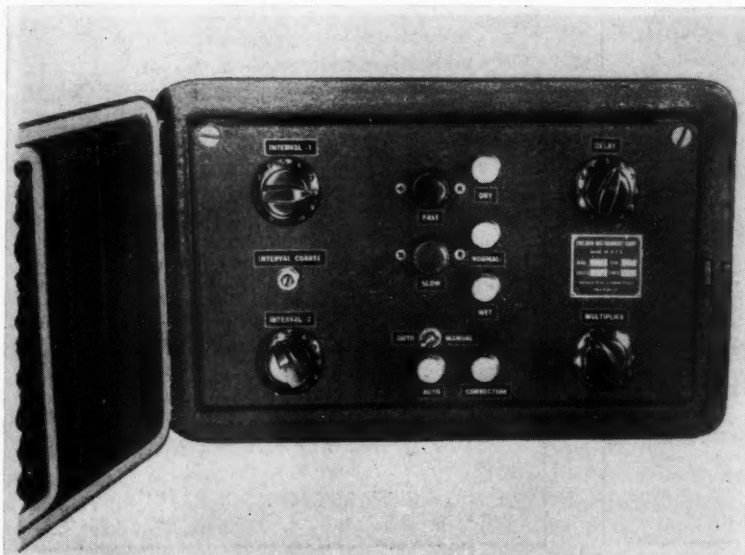
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## Fieldren Automatic Control



The new Fieldren ARC-1 Automatic Control provides a continuous indication of the process variable and automatically maintains control point

There often are considerable time lapses between the making of a correction in machine speed, temperature or other variables and stabilization of the process variable as a result of this change.

This is particularly true in processes such as continuous drying. If any form of floating control is used, considerable over correction and hunting results.

A continuous indication and record of the process variable and automatic control of the machine to correct for any deviation from the desired control point are provided with the new Fieldren ARC-1 automatic control.

The control may be set to ignore momentary deviations, then make

corrections which are proportional to the deviation from the desired control point at time intervals automatically adjusted to suit machine or process speed.

The company explains that the new equipment is easy to install. Push buttons for manual control are provided on the instrument panel and additional push buttons may be installed elsewhere when required. Pilot lights indicate when the process variable is within tolerance limits above or below the control point, also when a correction is being made.

Further information may be obtained on the automatic control equipment by filling out a **Reader's Service Card**. Ask for **11-2**.

### Emulsifier Reinforcements

Reinforcement of agricultural emulsifiers is announced by Alrose Chemical Company. The company stated that Alrodynes 315 and 255, widely used during the past season for DDT, chlordane, methoxychlor, lindane and toxaphene, now are reinforced by two new Alro emulsifiers: Alrodyne 97 for 40 per cent and 85 per cent 2, 4 D ester concentrates and Alrodyne G for quick-breaking DDT,

lindane, aldrin and parathion emulsions.

The new Alrodynes are potent aphicides, producing 93-100 per cent kill of pea aphids at 0.2 per cent concentration in water for a five-second spray.

### Sulfur Savings Possible

Big savings in the drastically low supply of sulfur may be made if Crag Fruit Fungicide 341 is used instead of the precious brimstone,



# 80 years

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## MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

**Stoneware Chamber Sprays** now used by nearly all chamber spray sulphuric acid plants.

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**PHOSPHATE ROCKS and LIMESTONE**

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## Dictionary of Fertilizer Materials & Terms

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## FERTILIZER MACHINERY and ACIDULATING EQUIPMENT

BATCH MIXERS — PULVERIZERS — CAGE MILLS — SCREENS — SCALES  
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**ATLANTA UTILITY WORKS**

EAST POINT, GA.

Union Carbide and Carbon Corporation declares.

The new fungicide is used to control apple scab. One pound of the material is used in place of 12 pounds of sulfur. If the fungicide is used for an entire season, a saving of 200 pounds of sulfur per farmer would be effected, the company claims.

#### Canada To Get Sulfur

Canada has been allocated 86,250 tons of sulfur for essential defense and civilian production during the first quarter of 1952, the Defense Production Authority announced.

DPA agreed to provide rail deliveries during the winter and early spring. It will permit a carryover into the second quarter on sulfur not delivered before April 1.

Despite the allocation, Canada has stated she will not have enough sulfur to meet the needs of capacity newsprint and pulp output. Canadian officials said no reduction in the output of newsprint is expected in the first quarter.

#### Hudson Corp. Adds Unit

Doubling of the plant's capacity will be made possible with the second unit of the Hudson Pulp & Paper Corporation's kraft mill in Palatka, Fla., the company announced.

A \$10,000,000 addition to the plant that will permit broad flexibility in output was dedicated December 6 by Governor Fuller Warren, of Florida.

Virtually every modern improvement in paper-making equipment is incorporated in the new facilities. Kraft paper in every weight from 20 to 90 pounds will be produced in the mill, William Mazer, vice-president, said.

#### Hooker Company Plans

##### Midwest Chlorine Plant

The Hooker Electrochemical Company is planning construction of a 10-million-dollar chlorine and caustic soda plant with a capacity of 100,000 tons yearly.

The new plant will be constructed at Montague, Mich., and

is expected to be in operation by the end of 1953. Midwest industry will be served by the unit.

Salt brine will be converted into chlorine, caustic soda and hydrogen by the Hooker S-3A cell, the company announced. A 200-acre brine field will be maintained by the plant. Total plant area, including the field, will be 400 acres.

#### Bemis Bag Magazine

##### Wins Award of Excellence

The employee magazine of the Bemis Brothers Bag Company, Bemistery, received one of three awards of excellence in the magazine division of the annual competition of the Society of Associated Industrial Editors.

The award was presented to editor Mina Sennott, of St. Louis, at the society's convention in Biloxi, Miss., October 3-6.

#### New South African Plant

South African fertilizer needs will be met by construction of a

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BASIC COPPER SULPHATE

## ZEE-N-O

(Neutral Zinc)

The High Test Nutritional Basic Zinc  
56% Zinc as Metallic

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(Neutral Manganese)

The High Test Nutritional Manganese  
55% Mn as Metallic

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**Fertilizer Mixing and Bagging Units**

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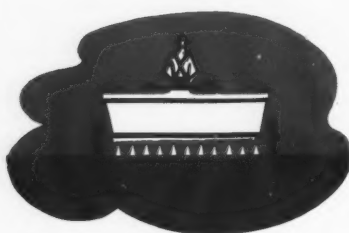
*Subsidiary of United Engineering and Foundry Company*

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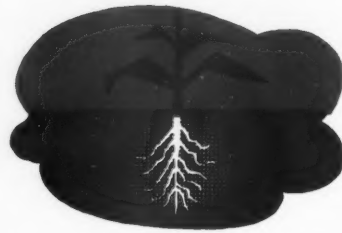
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**STORAGE CONTROL**—No caking or lumping while in storage.



**APPLICATION CONTROL**—No dusting or bridging; drills free and even.



**FOOD CONTROL**—Supplies plant food at a uniform rate.

Now it is possible for you to store superphosphate without fear of its caking... that is, if it is **DAVCO GRANULATED SUPERPHOSPHATE**. DAVCO Granulated Superphosphate will not become hard or caked... it is easier to apply in the field because there is no dusting or bridging over in the drill.

DAVCO Granulated Superphosphate gives complete coverage in the field... drilling freely and evenly... supplying each plant with a uniform quantity of nutrient phosphorus.

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PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, SILICOFLOURIDES AND FERTILIZERS



nitrogenous-fertilizer plant at Modderfontein, South Africa, according to a report from the Department of Commerce.

The plant, which will cost an estimated 3,000 pounds sterling, is expected to be put into operation by 1953.

#### **Du Pont Safety Record Laid to Employee Program**

Organized safety activities have given the duPont company an excellent record of plant safety, Emile F. du Pont declared recently.

DuPont, director of the company's employee relations department, said an estimated 38,000 employees escaped injury over the past 25 years because organized safety activities prevented the accidents from happening.

Frequency rate of injuries last year was .72 for each million man-hours worked, which means that more than 99.8 per cent of the company's employees did not suffer a single time-losing injury.

Over the past quarter-century, he stated, employees suffered 5,842 time-losing injuries. Recently one of the company's plants reached a

total of more than 28,000,000 man-hours worked without a lost-time accident.

In explaining the safety program, duPont said "We believe in the establishment of fair and equitable safety rules, and in strict enforcement of them."

By teaching correct work habits in training programs, employees benefit by the safety plan, he added.

#### **Lerch Says Oil Industry Should Tell Its Progress**

"Agriculture and that phase of the oil industry which serves it can improve the climate for increasing progress by telling effectively the story of their achievements and developments."

That statement was made by Don Lerch, Washington farm reporter, at the annual meeting of the American Petroleum Institute, in the Stevens Hotel, Chicago, November 5

Lerch spoke on the topic "Bomb-sight on the Bread Basket." He asserted that if our cities are bombed our food supply is destroyed.

"An enemy bombardier with sights zeroed for the destruction of a giant American city is at the same time aiming a paralyzing blow at the vitals of the world's most productive agriculture; for the bombsight on industry is centered on the vulnerable heart of agriculture," he said.

He told the members they could win friends for the oil industry by relating the story of what it has contributed to farm progress.

#### **Quisenberry Chosen For USDA Planning Job**

Responsibility for the overall planning and coordination of the research activities of the Bureau of Plant Industry, Soils and Agricultural Engineering of the USDA will come under Karl S. Quisenberry, who recently was appointed assistant chief in charge of planning and coordination for the bureau.

He succeeds Dr. A. H. Moseman, who was named chief of the bureau, which has its national headquarters in Beltsville, Md.

Quisenberry is a native of Denison, Tex. He was graduated from Kansas State College and took ad-

## **Your partners**

*are the farm families throughout the nation who buy your products. Many of their production needs are closely related to yours.*

*Their success in meeting this year's greatly increased food and fiber goals depends to a large extent upon your ability to manufacture and distribute essential supplies of fertilizers and pesticides.*

*Farm organization leaders, along with their experienced Washington staffs, are constantly presenting factual data on farm operations to key Congressional and Government officials.*

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*It is apparent that you will both make a greater contribution toward a stronger America with a full breadbasket by . . . working together as partners.*

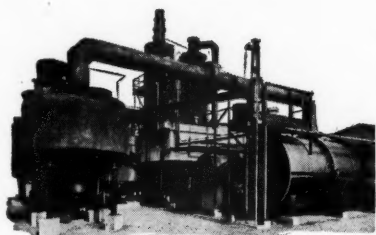
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## **CHEMICO PLANTS**

*are profitable  
investments*



Chemico's services cover every detail in design and construction of sulphuric acid plants, acid concentrators, complete fertilizer plants and P-A Venturi Scrubbers for fluorine fume elimination.

Chemico's performance guarantees are backed up by 35 years of experience. Consultation involves no obligation.

### **CHEMICAL CONSTRUCTION CORPORATION**

**488 Madison Ave. New York 22, N. Y.**

vance work in plant genetics and pathology at the University of Minnesota.

Since 1946 he has been head of the division of cereal crops and diseases at Beltsville, in charge of research on the production, improvement and disease control of barley, corn, grain sorghums, flax, oats, rice and wheat.

New research was started under Quisenberry on small grains for the South, seed flax in California, barley malting quality and wheat quality. The division has intensified its search for resistance in wheat varieties to the new race

15B of wheat stem rust and to the wheat mosaic disease.

Quisenberry's research will include every state and approximately 180 field headquarters.

#### Fuller Named Manager Of Research Services

John L. Fuller has been promoted to the newly created position of manager of research and technical services, Reliance Electric & Engineering Company, Cleveland, O., announced recently.

The promotion is in line with the company's expansion of its experi-

mental laboratory, development research and technical services.

Before his appointment, Fuller served as technical coordinator in the company's engineering department for a year.

Now he is in charge of the entire engineering research program for Reliance, and supervision of the general experimental, electronic and control laboratories.

These include additional research facilities to be located in a new plant in Euclid, O., which will supplement five other Reliance plants in Cleveland.

Fuller also will be in charge of

## MORE STEAKS PER STEER



**TO INCREASE AMERICA'S SUPPLY** of wholesome, nutritious, protein-rich beef, the fertilizer industry is helping farmers to grow bigger yields of better quality livestock feed at lower cost.

For example, high-Nitrogen, complete fertilizers and Nitrogen top-dressings, used on pastures, produce a luxuriant growth of grazing crops rich in proteins,

minerals, vitamins and other nutrients. Steers harvest these extra yields of good green feed and use them to produce extra pounds of high quality beef.

These facts are featured in the most recent in a series of Barrett advertisements in The Saturday Evening Post and Fortune directing attention to the service of the fertilizer industry.

### THE BARRETT DIVISION ALLIED CHEMICAL & DYE CORPORATION

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MAKES PLANTS GROW!**

\*Reg. U. S. Pat. Off

**FARM CHEMICALS**

# How You Can Get

# Free Information

On each of the two postage-paid postcards below you can request further information on four items described on this and the Industrial News section of this issue. Fill out one quarter section for each item in which you are interested.

## 11-3 Fertilizer Use

The National Fertilizer Association has released a new pamphlet, "Fertilizer Use at the Half-Century Mark." It supplies interpolations on a 1950 basis, of statistics obtained in a comprehensive 1947 survey made by the Bureau of Agricultural Economics, USDA. The booklet assesses current use of fertilizers and forecasts an unlimited future for fertilizers.

## 11-4 Rotary Dryer

Drying of ammonium sulphate, ammonium nitrate, and other materials can be done efficiently with an XW

rotary dryer, the Hardinge Company declares in a bulletin on the subject.

Air temperatures up to approximately 280° may be obtained with the dryer. By means of an induced draft fan, air is pulled through steam coils where it is heated. The warm air then continues through the dryer shell. Higher air temperatures can be provided with indirect oil or gas-fired heaters, according to the company.

## 11-5 Monoglycerides

Methods of manufacture of monoglycerides of the fatty acids are discussed in an article available from

Glyco Products Company.

The article, entitled "Monoglycerides Finding Wider Uses In Industry", outlines the varying compositions and physical properties which are possible. A specification chart also is included to illustrate the article.

Applications of the monoglycerides in the insecticide and other fields is noted.

## 11-6 Farm Chemicals Research

Analysis of spray residues, fertilizers, fungicides and insecticides is offered by the Raymond C. Crippen Research and Development Laboratories.

The laboratories will determine the

Here is a list of the  
**NEW PRODUCTS** and  
**BULLETINS** described  
on this and the **Indus-**  
**trial News** pages of  
this issue giving their  
monthly code number.

- 11-1 Chain Vise
- 11-2 Automatic Control
- 11-3 Fertilizer Use
- 11-4 Rotary Dryer
- 11-5 Monoglycerides
- 11-6 Farm Chemicals Research
- 11-7 DA Bagpacker
- 11-8 Tractor-Shovel
- 11-9 Heavy-Duty Mixer
- 11-10 Magnetic Separators
- 11-11 Rotary Feeder
- 11-12 Redi-Fab Conveyors
- 11-13 Toxaphene
- 11-14 Vibrating Screen

FILL OUT READER SERVICE CARDS

Name.....	51	Name.....	51
Title.....	<input type="checkbox"/>	Title.....	<input type="checkbox"/>
Company.....	Write in the number of the product about which you want more information	Company.....	Write in the number of the product about which you want more information
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Co. Address.....		Co. Address.....	
FARM CHEMICALS PHILADELPHIA 7, PA.			



amount of any given chemical in a fertilizer or other farm chemical. Sampling and inspection in the field or factory also is done upon request.

A complete list of the services offered by the laboratories to farm chemicals manufacturers and mixers along with a price list, is available from the organization.

#### 11-7 DA Bagpacker

If you bag high-priced materials or materials that need special protection, the DA Bagpacker is the machine for the job, the International Paper Company claims.

The closing and sealing machine is recommended for insecticides, fungicides and many other materials. It is designed to handle multi-wall bags only and is quickly adjustable for a range of bags from 25 to 100 pounds capacity.

The machine applies a closure which is proof against sifting, contamination and infestation and which offers maximum resistance to moisture attack. Further specifications of the bagpacker, which performs a complete closing and sealing operation at high speed, are given in a bulletin issued by the company.

#### 11-8 Tractor-Shovel

Materials handling always is a problem in the farm chemicals industry. With the new Hough tractor-shovel many of these problems can be solved, the company asserts.

The 1¼ cubic yard capacity machine features a full-reversing transmission, operator visibility and safety, full hydraulic bucket control and power booster steering. Complete specifications of the new tractor-shovel are given in a catalog recently completed by the company.

#### 11-9 Heavy-Duty Mixer

Rugged, heavy duty mixing machines built in capacities from 100 to 300 gallons are illustrated and explained in a booklet of the J. H. Day Company.

Mogul mixers which can be adapted for handling heavy masses within the capacity of the machine are constructed by the company.

The dump mechanism on the mixer is operated by separate motor with limit switches for controlling travel of the dump screw. A brake on the motor stops it after the circuit has been opened. Other kneading and mixing machines for all uses are included in the literature.

#### 11-10 Magnetic Separators

Their line of magnetic separators and lifting magnets is described in a new catalog put out by the Dings Magnetic Separator Company. The booklet tells which magnets to use to remove iron from wet or dry materials carried on conveyor belts, as well as from chutes and ducts.

Units for magnetic concentration and purification, heavy media recovery and materials handling also are described in a booklet that serves as a handy guide to the selection of a magnet from the standpoint of application.

#### 11-11 Rotary Feeder

A continuously rotary motion with an infinitely variable speed drive that has a controlled speed range from zero to maximum revolutions per minute is claimed for the new Draver "Micro-Master" feeder built by the B. F. Gump Company.

The new feeder retains the sturdy construction and correct basic design of the regular line of Draver feeders, but the intermittent motion, double-acting ratchet drive has been replaced by the new rotary mechanism, the company states.

Capacity easily is controlled by a simple micrometer-type adjustment which is complete with dial indicator. A descriptive folder on the new feeder gives complete details.

#### 11-12 Redi-Fab Conveyors

If you have had difficulty selecting the proper conveyor for your particular use, the Barber-Greene company thinks it can help. In its catalog describing its Redi-Fab Conveyor series, the company presents tables for determining the proper material, belt width and capacity for any material or angle of incline.

The Redi-Fab series was designed to simplify conveyor selection in the range that is most commonly used. The catalog gives details for laying out a conveyor for the standard elevation of 18°. Charts and illustrations guide the reader in determining his needs.

#### 10-13 Toxaphene

Since 1947, toxaphene has been widely used for the control of boll weevils, grasshoppers, and other insects. Information on the emulsification of the chlorinated camphene with tritons now has been prepared by Rohm and Haas. The bulletin describes the formulation and requirements of a good toxaphene emulsion.

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## LION provides one-stop nitrogen service to Southern fertilizer manufacturers

**Lion Anhydrous Ammonia** — Manufactured in Lion's modern plant to an 82.25% nitrogen content under accurate chemical control, the uniformity and high quality of this basic product are assured.

**Lion Aqua Ammonia** — This product is available to manufacturers for use in the formulation of mixed fertilizers or for sale as direct application material. Normally about 30% ammonia, its content can be controlled by order to suit your needs.

**Lion Nitrogen Fertilizer Solutions** — Made specifically for the manufacturing of mixed fertilizers, these products supply both ammonia nitrogen and nitrate nitrogen in the ratios desired. They are easily handled and available in three types designed for varying weather conditions, and for formula requirements in the production of fertilizers that cure rapidly, store well and drill evenly.

**Lion Ammonium Nitrate Fertilizer** — The improved spherical white pellets in this product contain a guaranteed minimum of 33.5% nitrogen. They flow freely, resist caking and store much better.

Lion Ammonium Nitrate Fertilizer is shipped in 100-pound, 6-ply bags with two moisture-proof asphalt layers.

**Lion Sulphate of Ammonia** — This new, superior-type sulphate is guaranteed to contain a minimum of 21% nitrogen. Through special conditioning of the larger crystals, moisture and free acid content is greatly reduced. These factors, together with the special coating applied, make for greater resistance to caking in shipment or in storage. This product flows freely. It is shipped in bulk and in 100-pound, 6-ply bags laminated with asphalt.

### "Serving Southern States"

*Technical advice and assistance to fertilizer manufacturers in solving their manufacturing problems is available for the asking . . . just write.*

## LION OIL COMPANY

Chemical Division • El Dorado, Arkansas



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WILL FLOW FROM**

**DUVAL**

**Sulphur and Potash Company**

*upon completion of its*

**NEW PLANT  
AND  
REFINERY**

**now under construction at  
CARLSBAD, N. MEX.**

**ANTICIPATED PRODUCTION DATE**

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**DUVAL POTASH FOR BETTER PRODUCTS  
OF FARM AND FACTORY**

handling selected development project assignments and will continue to coordinate technical services within the Engineering Department and their extension to other departments of the firm.

The new manager joined the Reliance organization in 1936 after graduation from Case Institute of Technology, Cleveland.

#### **Brinkworth Appointed To Link-Belt Position**

William J. Brinkworth has been named representative in distributor sales, Southwestern division, of Link-Belt company.

He will have offices in Houston, Tex.

Brinkworth has been field manager, oil field distributor sales, and continues in this capacity. He also will supervise sales through the company's industrial distributors in the Southwestern region.

He started work for Link-Belt at the Ewart plant in Indianapolis, in 1929, where he served in the malleable foundry department.

Later he was employed in the estimating department. He was transferred to Houston in 1946, after gaining eight years' experience in the sale of job malleable iron and Promal casting; then pricing and plant contacts with distributors.

#### **Dechema Exhibition**

Extraordinary interest in the Achema X Exhibition of chemical apparatus has been shown by German and other firms, according to an announcement from Dechema Deutsche Gesellschaft.

Dechema will sponsor the ex-

hibition at Frankford on Main May 18 to 25, 1952.

Space in the affair already has been reserved by 311 firms representing many countries. Of the 11,200 square meters of exhibiting space, 10,500 already has been reserved. Another 150 companies are expected to participate in the program.

#### **Salzenberg Assistant Manager of Grasselli**

DuPont announces the appointment of Walter H. Salzenberg as assistant general manager of the company's Grasselli Chemical department.

Salzenberg succeeded Clark W. Davis, who assumed duties as general manager of Grasselli. Salzenberg's promotion follows retirement of Emmet C. Thompson, who had been general manager since 1942. The Grasselli department produces acids and heavy chemicals for industry, and agricultural chemicals, including insecticides, fungicides and weed killers.

Salzenberg has been departmental engineer of Grasselli since August, 1950. He joined the engineering department in 1929 after graduation from Lehigh University.

He served first as junior engineer at the Chambers Works of the Organic Chemicals Department, at Deepwater Point, N. J. In 1931 he was assigned to the Grasselli plant as junior engineer.

#### **Phillips Wins Award**

Phillips Petroleum Company won the 1951 award for Chemical Engineering Achievement, the highest honor in its field.

The company was chosen by 70 leading chemical engineering educators from colleges and universities in the United States.

The company's work in high abrasion carbon black and its contributions to the success of cold rubber won the award.

The award is made by "Chemical Engineering" magazine.

#### **New Manager**



**John Stoddard**

John Stoddard has been appointed sales manager in charge of all domestic sales activities by John Powell & Company, suppliers of insecticide concentrates. The appointment was announced by Dr. Alfred Weed, vice-president in charge of sales.

The promotion of Paul Williams to sales representative for the company's southeastern regional territory also was reported by Dr. Weed. Williams' headquarters will be in Huntsville, Ala.

## **FEEDING AND FERTILIZER MATERIALS**


(SINCE 1898)

---

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**1343 ARCH STREET**

**PHILADELPHIA 7, PA.**



**V-C fertilizers**  
Complete Fertilizers • Superphosphate  
Concentrated Superphosphate  
Phospho Plaster • Organic Materials  
V-C Plant Food

**V-C fibers**  
Vicara® • Zycon®  
Wavecrepe®

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A Complete Line of Cleansers

**V-C phosphate rock products**  
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Sulphuric Acid • Phosphoric Acids • Phosphorus  
Disodium Phosphate • Trisodium Phosphate  
Tetrasodium Pyrophosphate • Sodium Tripolyphosphate  
Ferrophosphorus • Sodium Metasilicate  
Liquid Sodium Silicates • Phosphorus Chlorides  
Tetraethyl Pyrophosphate... and other  
organic Phosphorus compounds

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Burlap Bags • Cotton Bags  
Paper Bags

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# BUYERS' GUIDE •

Classified Index to Advertisers in  
"Farm Chemicals"

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Barrett Div., Allied Chemical & Dye Corp., New York City  
Commercial Solvents Corp., New York City  
Lion Oil Co., El Dorado, Ark.  
Phillips Chemical Co., Bartlesville, Okla.  
Spencer Chemical Co., Kansas City, Mo.

## AMMONIUM NITRATE

Lion Oil Co., El Dorado, Ark.  
Phillips Chemical Co., Bartlesville, Okla.  
Spencer Chemical Co., Kansas City, Mo.

## BAG MANUFACTURERS—Burlap

Bemis Bros. Bag Co., St. Louis, Mo.  
Mente & Co., Inc., New Orleans, La.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## BAG MANUFACTURERS—Cotton

Bemis Bros. Bag Co., St. Louis, Mo.  
Mente & Co., Inc., New Orleans, La.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## BAG MANUFACTURERS—Paper

Bemis Bros. Bag Co., St. Louis, Mo.  
International Paper Co., Bagpak Div., New York City  
Hammond Bag & Paper Co., Wellsburg, W. Va.  
Jaite Company, The, Jaite, Ohio  
Kraft Bag Corporation, New York City  
Mente & Co., Inc., New Orleans, La.  
Raymond Bag Co., Middletown, Ohio  
Union Bag & Paper Corp., New York City  
Virginia-Carolina Chemical Corp., Richmond, Va.

## BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.  
McIver & Son, Alex. M., Charleston, S. C.

## BAG CLOSING MACHINES

International Paper Co., Bagpak Div., New York City

## BAG PRINTING MACHINES

Schmutz Mfg., Louisville, Ky.

## BAGGING MACHINES—For Filling Sacks

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## BONE PRODUCTS—Bone Black

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## BORAX AND BORIC ACID

American Potash and Chem. Corp., New York City

## BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackle, Frank R., New York City  
Keim, Samuel D., Philadelphia, Pa.  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## BUCKETS—For Hoists, Cranes, etc.

Hayward Company, The, New York City

## BUCKETS—Elevator

Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## CARS AND CART

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Mach. Works, Aurora, Ind.

## CASTOR POMACE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
McIver & Son, Alex. M., Charleston, S. C.

## CHEMICALS

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Barrett Div., Allied Chemical & Dye Corp., New York City  
Commercial Solvents Corp., New York City  
Davison Chemical Corporation, Baltimore, Md.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Lion Oil Company, El Dorado, Ark.

Koppers Company, Inc., Tar Products Div., Pittsburgh, Pa.

McIver & Son, Alex. M., Charleston, S. C.  
Phillips Chemical Co., Bartlesville, Okla.  
Spencer Chemical Co., Kansas City, Mo.  
Synthetic Nitrogen Products Corp., New York City  
United States Steel Corp., New York City  
Virginia-Carolina Chemical Corp., Richmond, Va.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## CHEMISTS AND ASSAYERS

Gascoyne & Co., Baltimore, Md.  
Shuey & Company, Inc., Savannah, Ga.  
Wiley & Company, Baltimore, Md.

## CONDITIONERS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackle, Frank R., New York City  
Keim, Samuel D., Philadelphia, Pa.  
McIver & Son, Alex. M., Charleston, S. C.  
National Lime & Stone Co., Findlay, Ohio

## COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.

## DRYERS

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## ENGINEERS—Chemical and Industrial

Chemical Construction Corp., New York City  
Fairlie, Inc., Andrew M., New York City  
General Industrial Development Corp., New York City  
Marietta Concrete Corporation, Marietta, Ohio  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Titelstad Corporation, Nicolay, New York City

## FERTILIZER (Mixed) MANUFACTURERS

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Davison Chemical Corporation, Baltimore, Md.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Southern States Phosphate & Fertilizer Co., Savannah, Ga.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## HOPPERS

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Southern States Phosphate & Fertilizer Co., Savannah, Ga.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## INSECTICIDES

American Agricultural Chemical Co., New York City  
Andrews Sales, Inc., W. R. E., Philadelphia, Pa.  
Ashcraft-Wilkinson Co., Atlanta, Ga.

## LIMESTONE

American Agricultural Chemical Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
McIver & Son, Alex. M., Charleston, S. C.  
National Lime & Stone Co., Findlay, Ohio

## LOADERS—Car and Wagon

Hough Co., The, Frank G., Libertyville, Ill.  
Sackett & Sons Co., The A. J., Baltimore, Md.

## MACHINERY—Acid Making and Handling

Atlanta Utility Works, The, East Point, Ga.  
Chemical Construction Corp., New York City  
Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## MACHINERY—Ammoniating


Sackett & Sons Co., The A. J., Baltimore, Md.

## MACHINERY—Grinding and Pulverizing

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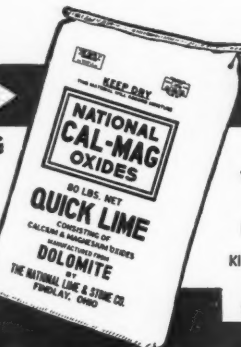
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CaO 58.07  
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HYDRATED  
LIME (165 TNP)  
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KILN DRIED RAW  
DOLOMITE  
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OFFER DEPENDABLE PROTECTION FOR  
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Hough Co., The Frank G., Libertyville, Ill.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

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Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

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Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## MACHINERY—Superphosphate Manufacturing

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
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## MANGANESE SULPHATE

McIver & Son, Alex. M., Charleston, S. C.

## MINOR ELEMENTS

Andrews Sales, Inc., W R. E., Philadelphia, Pa.  
Tennessee Corporation, Atlanta, Ga.

## MIXERS

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## NITRATE OF SODA

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Barrett Div., Allied Chemical & Dye Corp., New York City  
International Minerals & Chemicals Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.

## NITROGEN SOLUTIONS

Barrett Div., Allied Chemical & Dye Corp., New York City  
Lion Oil Company, El Dorado, Ark.  
Phillips Chemical Co., Bartlesville, Okla.  
Spencer Chemical Co., Kansas City, Mo.

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Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.

## PHOSPHATE ROCK

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## PLANT CONSTRUCTION—Fertilizer and Acid

Atlanta Utility Works, The, East Point, Ga.  
Chemical Construction Corp., New York City  
Fairlie, Inc., Andrew M., New York City  
General Industrial Development Corp., New York City  
Monsanto Chemical Co., St. Louis, Mo.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Titelstad Corporation Nicolay, New York City

## POTASH SALTS—Dealers and Brokers

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Synthetic Nitrogen Products Corp., New York City

## POTASH SALTS—Manufacturers

American Potash and Chemical Corp., New York City  
Potash Co. of America, New York City  
International Minerals & Chemical Corporation, Chicago, Ill.  
United States Potash Co., New York City

## PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

## REPAIR PARTS AND CASTINGS

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## SCALES—Including Automatic Bagging

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## SCREENS

Atlanta Utility Works, The, East Point, Ga.  
Sackett & Sons Co., The A. J., Baltimore, Md.  
Stedman Foundry and Machine Co., Aurora, Ind.

## SEPARATORS—Air

Sackett & Sons Co., The A. J., Baltimore, Md.

## SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.

## STORAGE BUILDINGS

Marietta Concrete Corporation, Marietta, Ohio

## SULPHATE OF AMMONIA

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Barrett Div., Allied Chemical & Dye Corp., New York City  
Jackle, Frank R., New York City  
Koppers Co., Inc., Tar Products Div., Pittsburgh, Pa.  
Lion Oil Co., El Dorado, Ark.  
McIver & Son, Alex. M., Charleston, S. C.  
Phillips Chemical Co., Bartlesville, Okla.  
United States Steel Corp., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULPHATE OF POTASH—MAGNESIA

International Minerals & Chemicals Corporation, Chicago, Ill.

## SULPHUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Texas Gulf Sulphur Co., New York City

## SULPHURIC ACID

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
McIver & Son, Alex. M., Charleston, S. C.  
Southern States Phosphate Fertilizer Co., Savannah, Ga.  
U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## SUPERPHOSPHATE

American Agricultural Chemical Co., New York City  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Davison Chemical Corporation, Baltimore, Md.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Southern States Phosphate Fertilizer Co., Savannah, Ga.  
U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Virginia-Carolina Chemical Corp., Richmond, Va.

## TANKAGE

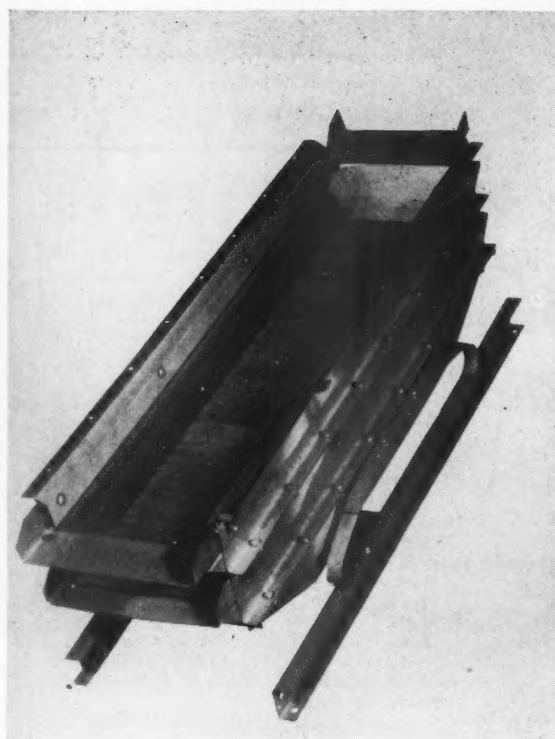
American Agricultural Chemical Co., New York City  
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Ashcraft-Wilkinson Co., Atlanta, Ga.  
International Minerals & Chemical Corporation, Chicago, Ill.  
Jackle, Frank R., New York City  
McIver & Son, Alex. M., Charleston, S. C.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## VALVES

Atlanta Utility Works, The, East Point, Ga.  
Monarch Mfg. Works, Inc., Philadelphia, Pa.

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A high-speed vibrating screen that provides continuous flow or batch screening operations on chemical, food, metallic or non-metallic materials, has been developed by the Universal Vibrating Screen Company.

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A single-deck screen weighs 120 pounds, while a double-deck unit weighs 145 pounds.

To obtain further information about the Universal Type "S" vibrating screen, fill out a **Reader Service Card**, using number **11-14**.





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#### MAGNESIUM-DEFICIENT GRAPEFRUIT

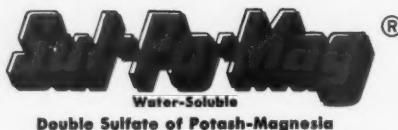
Magnesium-deficient grapefruit tree sheds leaves in late summer or fall, leaving fruit unprotected. The defoliated twigs become weak and subject to fungus infection and usually die.

Third in a series of six advertisements showing magnesium-deficiency symptoms in tobacco, cotton, grapefruit, corn, potatoes and oats.



## You can supply magnesium in the most effective way in mixed fertilizers

with



Reports by many farmers who are getting greatly increased yields and quality of a wide variety of crops by the use of soluble magnesium demonstrate that this nutrient is essential for healthy crop growth.

Fertilizer manufacturers and farmers both know from experience that the most practical and economical way to supply magnesium to growing plants is in *soluble* form in mixed fertilizers or used for direct application. That is why so many manufacturers regularly include *Sul-Po-Mag* in fertilizers for use with crops grown on magnesium-deficient soil.

*Sul-Po-Mag*, mined and refined exclusively by International, is a properly balanced combination of potash

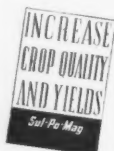
and magnesium, both in soluble form and immediately available to the growing plant.

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**MURIATE OF POTASH      SULFATE OF POTASH**

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- Necessary for the development of seed.
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- Stimulates growth of soil bacteria and fixation of nitrogen by legumes.
- Increases the plant's resistance to diseases.

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